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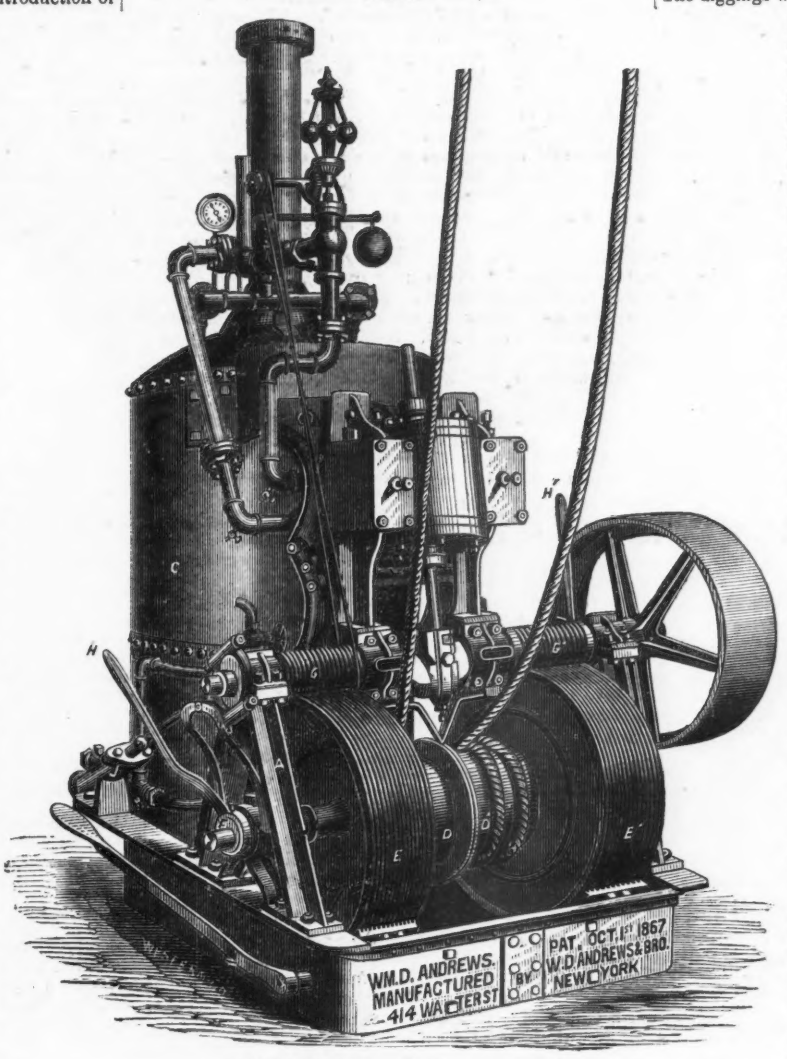
[From the Manufacturer and Builder for May.]

IMPROVED HOISTING APPARATUS.

A few days ago a flying visit, pencil in hand, to the widely known machine works of W. D. Andrews & Brother, 414 Water street, New York City, gave an opportunity for a few rough notes upon the subject of hoisting machinery. It seems that in the rapid progress now being made in nearly all kinds of mechanical devices, the matter of hoisting apparatus does not lag at all behind, but on the contrary maintains a firm place in the front line of improvement. This is at once apparent when the improvement is remarked that has taken place during the past few years. Some forty-five years ago, the old-fashioned method of raising weights by means of shears and windlass was the one in common use. Thereupon followed, at about that date, the introduction of geared hoisters well known to machinists, and a great improvement, it is true, upon the old method, yet not all that could be desired. These have been from that time in general use, but are likely, for the most part, soon to give place to friction-grooved hoisters, which were first brought to the notice of the public some three years ago, and already obtain quite largely in practice. Three of them are now in use in the construction of the new reservoir at High Bridge, being built in the intent of supplying Manhattanville with water. These hoisters raise at one time and with a single rope blocks of stone having a weight of twenty-five tons. In so far as simplicity of construction, accuracy of movement, and economy in working are concerned, there is hardly anything more to be desired.

The hoisters are made of various sizes, and by means of slight modifications of some parts of the machinery of them, they are made to raise large weights slowly, or light weights quickly. The machine represented by the accompanying beautiful illustration consists substantially of two drums, worked by means of one and the same engine. A somewhat minute description of it runs as follows: The drums are entirely disconnected from each other, or can be used alternately or simultaneously, applying the entire power of the engine to either barrel or dividing it between them. A A^1 is the frame of the hoister standing upon a foundation, B, attached to the base of the boiler, C. D D^1 are the drums, each having a large friction-wheel, E E_1, rigidly attached to its outer end. The shaft, F, is stationary, the drums revolving upon it. G G^1 are friction-pinions upon the engine shaft. The faces of the wheels, E E^1, and pinions G G^1, have projections, and corresponding depressions, extending around their circumferences, which fit into each other and when brought into forcible contact, power is communicated from either pinion to its respective wheel and drum. H H^1, are levers attached to eccentrics upon either end of shaft, F. By the use of lever, H, and its eccentric, the wheel, E, is raised into, or lowered out of contact with its pinion, G. The lever, H^1, and its eccentric perform the same office for the wheel, E^1, and its pinion, G^1. I is a brake-lever, operated by the foot, bringing a brake to bear on the face of wheel, E. A similar one (not seen) operates upon the wheel, E^1. These brakes are used for lowering or retaining the weight at any desired point. The brakes may be dispensed with and the same duties performed by graduating the pressure upon the levers, H H^1. The boiler used is a plain upright—a simple cone inside the outer part or shell—and, it is claimed, so put together as to render the liability of bursting a minimum. The engine is a direct acting oscillator, furnished with a governor and with a band balance-wheel, from which its power may be transmitted for any other use required. The force pump, J, for feeding the boiler, is driven from the engine shaft, runs constantly, and its delivery is regulated by a wheel valve. The hoister being instantaneously detachable, by turning levers, H H^1, the engine and boiler become as perfectly independent, complete, and adapted to any other use as if no hoister was connected with it. The power when required is less than when using gear; the unpleasant noise of, as well as danger from breaking the cogs, by overstraining or accident, is entirely avoided, and there is less wear. No concussion or jar results from throwing the hoister into or out of gear, either when loaded or light.

This system of hoisters is used, among other purposes, for driving piles, for raising cargoes upon shipboard, for hoisting sails upon large vessels, and for the hoisting of coal at the yards. As to cost, they range, according to size and kind, from one thousand to three thousand dollars each. They may be considered, and that truthfully, a highly important labor-saving, and therefore a money-saving apparatus.



IMPROVED HOISTING APPARATUS.

The Mining Excitements of California.

Apropos to the White Pine fever, a writer in the *Overland Monthly* gives the following pleasant sketch of the mining excitements of California:

"The discovery of the Australian mines occurred in 1851, at the time when the California diggings were still in a very productive condition—and very few left this coast. About the close of 1853 a series of false letters in regard to the opening of rich gold mines on the headwaters of the Amazon, in Peru, were published in the Panama papers, and as it was supposed that they were written in good faith and had some foundation in fact, they were republished by the public journals of California. They misled a thousand men to go to Callao, and on their arrival there they were astonished to find that the people in Peru had never heard of the new diggings.

"The Kern River excitement, in the spring of 1855, surpassed everything that had preceded it. In this case, as in several others which had preceded it, a number of false letters, written undoubtedly with a deliberate purpose to deceive, were published. The purpose was attained, for not less than five thousand miners went to Kern River, and as many more had prepared to follow them. Men in every branch of employment threw up their business, or sold out at a sacrifice. Labor rose in value, and many farms and mines lay idle for the lack of laborers. It looked for a time as though all other places were to be deserted for Kern River. But in a few weeks it was known that there never had been any rich diggings in the valley of Kern River, and that the few claims which had paid were worked out.

"For nearly three years the miners of California had comparative quiet, and then in the spring of 1858 came the news that rich auriferous deposits had been discovered on the banks of Fraser River, within a hundred miles of its mouth. The diggings were not extensive, but the gold was fine, implying that it had been carried by the river a considerable distance, and the opinion was formed from the analogies of Californian experience that there must be rich and extensive placers in the upper part of the basin of the stream. The Sacramento, the Feather, and the San Joaquin rivers never had any rich bars near their mouths, and they are far from being so large or so long as the Fraser. It was evident that the gold of the bars near Yale had not come from the neigh boring hills, but had been brought down by the current for a long distance.

"These facts justified the presumption, which, however, was not verified, that the valley of the Fraser must be richer in gold than that of the Sacramento was in 1849; and this presumption was the main cause of the Fraser fever. Another cause was that the miners were spoiling for an excitement. Many of the rich placers were exhausted. The live rivers, the gulches, and the shallow flat would no longer pay for white labor. The country was full of men who could no longer earn the wages to which they had become accustomed and they were unwilling to come down to farming at thirty dollars per month. They had become inductrially desperate. They were ready to go anywhere if there was a reasonable hope of rich diggings, rather than submit to live without the high pay and excitement which they had enjoyed for years in the Sacramento placers. Many of them had become unfit for the placid and orderly routine of the common laborer in other countries. They were demoralized by prosperity. "These men welcomed the rumors that a new California had been found in the basin of the Fraser with joy and enthuasm. They would not wait for the verification of the rumors. They would not allow others more confident than themselves to go and take up all the good claims. They started with as little delay as possible, and the people of Victoria, through whose town all the news came to San Francisco, were amazed at the rush of thousands of Californians for diggings which had yielded little gold, and had been taken up so far as they were known or accessible. The first notice of the mines was published in March; on the 20th of April the migration commenced, and in that month 500 adventurers went; in May, 2,000; in June, 9,500; and in the first ten days of July, 6,000—eighteen thousand in all. Nine steamers and twenty sailing vessels were engaged in the trade, the distance being only one thousand miles by sea, and the breezes very favorable to sailors. By the tenth of July more than one voter in six had left the state, and it seemed probable that the migration would continue at the same ratio. The mining counties having few homes, were the chief sufferers. Some of them lost more than a third of their population. General bankruptcy stared them in the face. Real estate lost from twenty-five to seventy-five per cent. of its market value. The stages were unable to carry the passengers bound to Fraser River as fast as they applied.

"San Francisco, although the adventurers purchased their supplies and spent money here while waiting for the vessels

that were to carry them off, suffered also. There was a great decrease in the value of city lands. Lots on Montgomery street south of Bush, now worth $1,500, were offered for $100 per front foot. Several of the wealthiest real-estate owners made preparations to 'hedge' and save themselves from loss here by buying lots in Victoria. Claims in the mining districts in demand in March at $1,000, went begging in June for buyers at $100, and the town property in the mountains suffered an equal depreciation. It seemed that the glory of California had departed. But the Fraser fever terminated more suddenly than it commenced. Though there were thousands of skilful miners on Fraser River up to the 10th of July less than $100,000 in dust had arrived in San Francisco. Their letters to their friends were not encouraging. They had been told before starting that the river was high with melting snow, and that the bars would not be accessible until low water should come with midsummer, and they were willing to wait; but those bars above high water mark did not pay like the high bars of the Yuba and Feather in 1849, and there were no ravine diggings like those of California. Some of the adventurers had succeeded in ascending the river several hundred miles, but they found nothing that came up to their expectations. In Victoria there were eight thousand men without employment, and many of them without money. On the tenth of July there were not less than two thousand men in San Francisco ready to sail for Fraser River, and thousands of others in all parts of the state were preparing to start notwithstanding the lack of encouraging news; but their intentions were changed within two days. The steamer Brother Jonathan, which sailed from this port on the 8th of July, foundered at sea; and though this disaster proved nothing against Fraser River, it was the shock which crystallized the general idea, previously entertained unconsciously, that the rush had continued too long. The migration suddenly stopped; soon the adventurers began to come back, and in a few months they were nearly all at work in their old places; many of them cured of their desperation by their hardships and privations in British Columbia, and glad to get back on any terms to 'God's Country,' as they called it."

News from White Pine.

The Treasure City correspondent of the San Francisco *Herald* writes as follows, under date, May 6: "I have now been in Treasure City about six weeks, and am exceedingly well pleased with the business and mining prospects of this whole region. There are various opinions among the residents of this district in reference to the permanence and extensiveness of a majority of the mines, but all who have examined them sufficiently to be properly capable of forming any opinion, express themselves perfectly satisfied that there is a very large number of very rich deposits of silver ore, and a lesser (though still a large) number of leads, which are not only immensely rich, but also extensive and well defined veins. It is not necessary to say anything about the Eberhardt, as its extraordinary richness is a fact too well known to require any comment from me, and I suppose that you and the public generally are equally cognizant of the immense wealth of the California mine, which is generally recognized here as being nearly, if not quite, on a par with the Eberhardt. Neither have I leisure to enumerate the many other claims which are coming into prominence daily, but I may at some future time give you particulars in regard to them. I will state here, however, that there are several mines recently located which are regarded with a great deal of interest by old residents, as likely to become "future Eberhardts" as regards richness. I believe that this will prove to be the richest and most extensive silver bearing region discovered in modern times, and although new and rich discoveries are being reported daily in the White Pine and base ranges of mountains, and in various places throughout Patterson, Grant, Troy, Robinson, Snake Mountain and other districts, yet, Treasure Hill is, in my opinion, the crowning point and silver centre of this whole region in the richness and extent of its beds of silver ore. Silver hunters and adventurers are arriving in this district in considerable numbers every day, and yet, according to the various accounts received here, the great rush has not commenced; but there is room enough for all, even though the number should equal the most extravagant figures that I have seen quoted by any writer on the subject, if they will only bring money enough with them to pay their expenses for a few months while prospecting for the hidden treasure, which seems to be abundant in every direction. Permit me, however, to state right here that it is the worst kind of folly for any one to come here without money, for, as a matter of course, silver cannot be found lying around loose on the surface of the ground here, any more than it can in San Francisco; and, although instances have occurred where rocks filled with rich chlorides and containing horn silver have been picked up on the surface, yet such instances have been rare, and will doubtless be more rare in the future, for the 16,000 (or more) inhabitants which this district now contains, have examined the surface of White Pine District tolerably well, with the exception of that portion which the winter snows have kept concealed since last fall. Not one in five (perhaps ten) of those now arriving here can get employment as soon as they arrive, for but few mines comparatively are being worked extensively at present. There are only four mills (running, all told, 33 stamps) which are prepared to crush ore in the district, and consequently many claims are lying idle which would employ a number of men and get out rich ore, if they could get it crushed. The Eberhardt ore sheds are full of precious chlorides, and the company have suspended operations on a portion of their mine for the present, as they have more ore ready for the mill than can be crushed with their present facilities between now and September. There are many companies here, of small capital, who have rich claims and will not sell them, but having got out large quantities of rich ore they are now waiting to get it crushed in order to obtain money enough to continue the work. You will easily comprehend, therefore, that there is not employment here at present for the crowds of men who are coming here without money sufficient to pay their expenses or to prospect on their own account. The consequence is that many of them, after running about the various towns of the district in search of employment and spending the paltry sum they brought with them, or (in vain hope of increasing it) "bucking away" at faro or some other "game of chance," until (after a few days) finding their pockets were emptied of "the needful," they have turned their steps homeward, taking Walker's line to Elko—cursing the country, and declaring to every one whom they met journeying hitherward that White Pine was the "greatest bilk" and "humbug" that they ever saw or heard of. There are many such in White Pine to-day, seeking a night's lodging and something to eat, and perhaps to-morrow some of them will be on the road to Elko, not having raised a pick or struck a drill in the district, and perhaps not having visited a single mine out of sight or hearing of the whisky saloons of Treasure City. There are four mills in process of erection at Hamilton and Shermantown, which, when completed, will more than double present milling facilities, and will very much increase the activity of the mines and demand for labor, besides naturally adding to our shipments of bullion. The weather here is very changeable, much more so than even in San Francisco. Monday may be ever so warm and pleasant, and yet you have no surety that a fearful snow storm will not be raging ere daybreak on Tuesday morning. Our winters are terrific, and your strongest San Francisco sea breezes cannot compare with them. The tented dwellings of this mountain city are generally very strongly framed, and braced thoroughly, yet, occasionally, they are forced to yield to the gentle (?) influences of our airy visitors, and some of them have been torn almost into ribbons, the posts of the framework being twisted off close to the groun. Our snow storms are generally accompanied by these gentle zephyers, and usually nine-tenths of the falling snow is blown clear off this side (west side) of the hill before the storm ceases, so that a snow-fall of three feet is frequently reduced to a few inches before the storm is over.

The deepest snow I have seen on Treasure Hill since I arrived was from 15 to 18 inches on a level, and that had more than half disappeared in less than twenty-four hours, and was all gone in three or four days, except small patches here and there in sheltered places. All the elements seem to unite their forces when they approach this hill, and our storms are composed of snow, hail, sleet, and 'Pogonips,' (which latter, as near as I can describe it, is a frosty or half frozen fog), and this combination of the elements comes flying thickly and fiercely through the air, usually almost horizontally, being driven along by an intensely bitter cold wind. Such is a storm on Treasure's summit, and woe betide that reckless one who shall dare to start out with the determination of facing it for any great distance. His determination will become cooled down very quickly I can assure you. Of course all our storms are not so severe as I have described above, for occasionally we are permitted to enjoy a tolerably respectable snow storm. Sometimes we have all the elements of storm mentioned above, on the same day, varied by half hours of beautiful sunshine tolerably warm and pleasant.

On Monday (April 26th) we had quite a severe storm; but in the afternoon the weather cleared up, and we have had warm and pleasant weather from that time until now, with the exception of a severe southeast blow on Sunday last, which caused the tented dwellings of Treasure to tremble violently, and for a time, it was thought that the building of Treasure City's Hook and Ladder Company would be blown down, but at nightfall the wind lulled, without having done any serious damage. Since Sunday the weather has been really delightful, and the citizens of Treasure are consoling each other with the idea that summer is dawning upon us, and that winter with its fierce storms, must soon take its departure. There is no snow on this side of Treasure Hill, except in shady, secluded spots. Treasure City is growing every day, buildings are going up in every direction, and it will certainly continue to be (as it always has been) the largest and most important town in the district. Clothing is very abundant, and can be had almost at San Francisco prices. Provisions and groceries have been very high, but are becoming cheaper every day. Teams are arriving from Salt Lake every day, loaded down with various kinds of produce, and the price of some articles has been reduced more than fifty per cent., by the abundance which our Mormon neighbors have poured into our midst during the last two or three weeks. Lumber, which has been very scarce, and sold readily a week ago for $350 per thousand feet, is now (in consequence of the fine weather of the past ten days) becoming very abundant, and can be had for $225 per thousand, being a fall of $125 in a week. A further reduction may be expected with a continuance of pleasant weather. The road from Elko to this city is now in excellent condition, and teams from the Central Pacific Railroad are constantly arriving, loaded with abundant supplies of goods of every description from San Francisco. A party of men, who have just arrived (having come all the way from Oakland with horse-teams), report having passed four mills, on the way, to this place, and the news is fraught with joy to all our population. We ought to have at least twenty mills here, and then we would ship bullion to San Francisco in such quantities that the many croakers who have been writing and talking about White Pine being 'a humbug,' and 'the Eberhardt giving out,' and asserting that there are no well-defined ledges here, etc., would be so sick of their business that they would, at least, find something else to do, instead of writing false reports about a country which will certainly prove to be the 'Silverado' of the world. The Eberhardt Company have struck $2,000 ore within the past few days, at a depth of 190 feet below the surface. The Excelsior have just developed a fine body of rich ore. The Hidden Treasure, the Othello shaft of the Pogonip, the Sage Brush, the Good Omen, and other claims, are getting out better ore than ever before."

—The Secretary of the Treasury has decided that the tariff, as well as commercial usage, recognizes a distinction between wrought iron tubes and wrought iron flues, and that the former are liable, in importation into the United States, to a duty of three and a half cents per pound, and the latter at two and a half cents per pound under existing laws.

AMERICAN INSTITUTE.

Proceedings of the Polytechnic Association.

MEETING HELD AT THE ROOMS OF THE ASSOCIATION, COOPER INSTITUTE, May 27, 1869.

PROF. S. D. TILLMAN IN THE CHAIR.

The meeting having been called to order, the President read the following items of scientific news:

TEST FOR ADULTERATED GLYCERINE.

The increased use of glycerine in the arts of late has, of course, brought into the market an adulterated article. When sugar and dextrine were mixed in small proportions with glycerine it has hitherto been difficult to detect the adulteration, but this is now easily done by the following method: To five drops of the glycerine to be tested add 100 to 120 drops of water, one drop of pure nitric acid, and three to four centigrammes of molybdate of ammonium, and boil the mixture, and in less than two minutes it will assume a deep blue color, if any sugar or dextrine is present.

ACTION OF SOFT WATER ON LEAD.

Dr. FRANKLAND, of the Royal Institution, has found that soft water, after passing through animal charcoal, loses its power to act on lead, and that this is owing to a minute quantity of phosphate of lime which passes from the charcoal into the water. The soft water of the river Vyrnwy, which does not act on lead, was found to contain an appreciable quantity of phosphate of lime.

IMPROVED ELECTRIC LIGHT.

F. P. LE ROUX has utilized the immense heat of the voltaic arc by placing a cylinder of magnesia, prepared by the process of M. Caron, having a diameter of about eight millemeters (.3144 inches) between the charcoal points of an electric lamp. Thus the magnesia displays an incandescence equal to that of the most luminous portion of the charcoal.

PORTABLE ILLUMINATORS.

M. ALVERGNIAT, a French electrician, has made an improvement first suggested to him when using the tubes invented by Giessler, which are cylinders or bulbs of glass filled with rarified gas that becomes luminous in the dark when a current of electricity is passed through it. The improvement consists in filling a glass cylinder or phial, hermetically sealed, with a substance which becomes phosphorescent by the action of frictional or static electricity. A tube of this kind may be of some service to those on night duty, for all that is requisite to produce a feeble and ephemeral light is to rub the tube briskly with a silk handkerchief.

TEMPERATURE OF THE BLOOD.

Dr. J. S. LOMBARD has applied his delicate thermo-electric apparatus to the study of the effects of respiration on the temperature of the blood, and has found that very cold and dry air taken into the lungs does not lower the temperature of the blood sufficiently to affect his apparatus, which will indicate any change of temperature exceeding 1-2,000 of a degree centigrade; and this may be accounted for by the fact that at low temperatures the air is more condensed and a larger proportion of oxygen is inhaled, and by its conversion a larger amount of heat is generated.

Mr. FISHER.—The temperature of the extremities is often a great deal lower than the normal average temperature of the body, and in cold weather people often suffer from this cause.

Dr. EDWARDS.—The temperature of the body remains constant under all circumstances. The extremities may become cold, but the interior of the body always maintains an even temperature.

Mr. EMORY.—Perhaps the fact stated by Dr. TILLMAN may be due to the circumstance that a pound of coal will evaporate more water—that is, it will make more steam on a cold day than on a warm one. This fact is pretty generally known to engineers.

Mr. PHIN.—I doubt the fact stated by Mr. EMORY. Every unit of heat added to the elements before combination serves to increase the ultimate result. If the air and coal were both heated to 200 deg., they would make more steam than if they were brought together at a temperature of zero. The results obtained by the hot blast serve very fully to establish this.

Dr. PARMELEE.—Is not all this due to the fact that during cold weather we are more active than we are during warm weather? During hot weather we get lazy; at least, most of us do.

A NEW ALKALOID—AKAZGIA.

This new alkaloid was found by Dr. FRAZER, of Edinburgh, in specimens of the Akazgia plant brought from the west coast of Africa, and which he supposed to be a new species of Strychnos. Akazgia is a crystalline alkaloid, closely resembling strychnia, but differing from it by being precipitated by alkaline bicarbonates. Travelers report that the natives of West Africa use Akazgia as an ordeal. A supposed sorcerer is compelled to drink an infusion of the bark of this plant and walk over small Akazgia sticks. If guilty, he tries in vain to pass the sticks and falls in convulsions, when he is beaten to death by the savages; but if innocent, the kidneys will act freely and the poison is thus eliminated. Dr. Frazer found certain twigs of the so-called Akazgia of different structure, which did not yield the new alkaloid, and it is probable that those natives who have escaped from the ordeal, drank a decoction made from this variety.

PRESERVATION OF MARINE ANIMALS.

Mr. A. E. VERRILL avers, in *The American Naturalist*, that he has successfully used glycerine for preserving marine animals by which they retain their natural colors nearly as brilliant as in life. The only precaution necessary is to use very heavy glycerine, and to keep up the strength by transferring the specimens to new glycerine as soon as they have given out water enough to weaken the first, repeating the transfer two or three times according to the size and number of the specimens until all the water has been removed. The old glycerine can be used again for the first bath. In many cases the specimens, especially the Crustacea, were killed by immersing them for a few minutes in strong alcohol, which aids greatly in the extraction of water, but usually turns the delicate kinds to an opaque, dull white color, but this opacity disappears when they are put in glycerine and the real colors again appear. The green shades turn red almost instantly in alcohol, and specimens of this class should be put at once into glycerine.

Mr. PHIN.—Glycerine is a very excellent and well known preservative agent, and has been used for many years for putting up specimens of natural history. The late Dr. Goadby used it extensively, and the works of Beale, Carpenter & Hogg give full directions for using it.

CLIMATIC CHANGES PRODUCED BY TREES.

It is stated in the *British Medical Journal* that the ground on which stands Ismailia, a town of 6,000 inhabitants, was but a few years since a dry, sandy desert, on which rain was never known to fall. All is now transformed. The old dried-up basin of Lake Timsah has been again filled with shrubs, and plants of all descriptions grow rapidly wherever the soil is irrigated, and the artificial oasis widens fast. Accompanying this extraordinary transformation of the place there has been a corresponding change in the climate. At the present time Ismailia, during eight months in the year, is probably the healthiest spot in northern Egypt. The mean temperature from June to September is 94 deg. Fahr., the four following months 74 deg., and the four winter months 45 deg. Until two years ago rain was unknown, but in twelve months ending in April last there were actually fourteen days on which rain fell, and lately there fell a tremendous shower of rain—a phenomenon which the oldest Arab had never previously witnessed. Rain ceases to fall on a country deprived of its forests, or only falls in violent storms. Here we see rain returning to the desert on restoring the trees.

DR. EDWARDS.—This is probably due to the fact that plants evaporate so much water, and this water returns in the form of rain.

DR. TILLMAN.—And yet, the ground under forests is invariably damp.

MR. PHIN.—It is not probable that the same water which is evaporated by the plants will return to the soil from which it was taken. The subject is one of great difficulty, and no theory that fully accounts for the phenomena has yet been propounded. It is not improbable that the trees act as lightning rods, and that the influence exerted in this way causes the rain to be precipitated.

WELLS DUG BY PRAIRIE DOGS.

MR. G. M. STERNBERG, in the *American Naturalist*, raises the question as to the manner in which the Prairie-dog obtains its supply of water. He does not accept the opinion expressed by Gen. Marcy, in his "Army-life on the Border," that the animal does not require any more water than is contained in the grass roots on which it feeds. The Prairie-dog towns on the plains are often situated miles away from any water that can be discovered, and it is difficult to understand how sufficient moisture could be contained in the food of the Prairie-dog to replace what must be lost in respiration, etc., and to carry on the process of digestion during the months of September, October, and November. At this season of the year it is not unusual for from 50 to 60 days to pass without a drop of rain falling. There is no dew, the air is extremely dry, and the short buffalo-grass (often the only thing which grows on the highlands where the prairie-dog villages are commonly found) becomes completely dried down to the roots, while the roots, being but two or three inches under ground, become hard and dry. As tame prairie-dogs are frequently seen to drink water, Mr. Sternberg expresses the belief that in every prairie-dog town there is a sufficient number of wells to supply the inhabitants with water. From attempts he had made to flood certain holes, he concludes that the dogs would not, in some cases, burrow so deeply and so straight down with any other object than to obtain water. Such holes show signs of being constantly resorted to by the dogs, and do not have the appearance of being lived in by a family.

MR. FISHER.—The late Mr. Fitz drank no water, tea, coffee, or other liquid. Perkins used to say that if we did not eat salt we would not require to drink water.

MR. PHIN.—Bread contains a good deal of free moisture, and, besides this, every pound of perfectly dry bread contains over half a pound of water in chemical combination with carbon.

DR. PARMELEE.—Does any one here know anything about these holes? It seems to me that we have not sufficient data to guide us in a discussion of the question. I cannot find out whether these holes are ten feet or thirty feet deep. Moreover, in what kind of soil are they dug? If the dogs dig through the sand to a stratum of clay at a depth of a few feet, they can probably find water very readily.

STEAM PLOW.

JUDGE KNAPP of Illinois exhibited and explained a novel kind of steam plow, which was intended to be used on the large fields of the West, and the cost of which it was hoped would be such as to bring it within the reach of every extensive farmer. The chief feature of this plow consisted in a vibrating arm, attached to the rear of the machine, and carrrying the plow proper, which was thus made to describe a semicircle at each stroke of the machine, and consequently to plow a semicircular furrow some twenty feet in diameter. The Judge expects that this machine can be operated by an eight horse-power engine, so as to plow at a much less rate than the present cost of operating by horses or oxen—a thing which the expensive British steam plows have thus far failed to accomplish.

MR. FISHER.—I deny that the British plows have proved a failure. The published reports show that they do the work at a greatly less cost per acre than is at present paid for the same work done by horses.

JUDGE KNAPP.—Yes, but their great cost places them beyond the reach of all except dukes, earls, etc.

MR. BLANCHARD.—It seems to me that when that plow moves it will have a tendency to move the whole machine sideways, and thus destroy its efficiency. The plow has a great leverage over the wheels, and if it is moved with a pressure of 400 pounds it will exert a force of several times that to move the machine.

JUDGE KNAPP.—The weight of the machine is so great that it will be almost impossible to move the wheels sideways.

MR. EMORY entered into an able and elaborate calculation, which went to show that the power stated by Judge Knapp was entirely below what would be requisite to operate the plow.

MR. WHITNEY attempted to point out some errors in Mr. Emory's calculation, but careful examination showed that it was pretty nearly correct.

ORIGIN OF THE VARIOUS ALPHABETIC FORMS.

DR. EDWARDS delivered a somewhat elaborate address descriptive of the manner in which the various letters of the different alphabets originated. The paper could not be made clear without the aid of engravings of the numerous drawings exhibited by the lecturer. It seemed to be the impression of the members that many of the ideas were more fanciful than well founded. The paper elicited no discussion.

—Iron roofs were first used in 1783, when Robert Ransome obtained a patent in England for their construction. In 1842, an iron palace, 50 by 30 feet, three stories high, was erected for the king of Eyamba, on the Calabar river, in Africa.

—A blast furnace for the manufacture of charcoal pig iron is to be established at Frankfort, on the eastern shore of Lake Michigan, by a company recently organized in Detroit, with a capital of $300,000.

Mining Summary.

GOLD AND SILVER.

Nevada.

Egan Canyon.—The following interesting description of the mines of Egan Canyon was prepared by L. F. Emmons, connected with Mr. King's geological expedition. The district is in the northeastern part of White Pine County, about 100 miles distant from Treasure City:

EGAN MOUNTAINS.

"Where the overland road crosses this range it is divided into two ridges, between which lies a pretty mountain valley, surrounded by well-wooded hills, easy of access, and in the valley bottom good grass and plentiful springs.

"The water from this valley finds an outlet in a northerly and easterly direction through Egan Canyon, at the head of which is situated the town and a 5-stamp mill. The western ledge is composed of limestone, the eastern of metamorphic rock, principally of quartzite, the formation having a north and south direction (magnetic), and dipping to the westward. At the mouth of Egan Canyon, on Steptoe Valley, granite comes up, extending on the north along the lower foot-hills, and on the south further, or rather high up into the range. Above the granite are quartzite cliffs, extending nearly up to the town (the canyon is about one and a half or two miles long), where the quartzite alternates with chlorite schist. At the hill, in the upper part of the town, is a stratum of fine roofing slate. In the lower hill, north of the town, about 300 feet above it, are the croppings of the Gilligan Ledge, which runs northeast and southwest, and dips from 60 deg. to 70 deg. to the northwest. This ledge belongs to the

SOCIAL AND STEPTOE MINING COMPANY OF NEW YORK.

"This company was incorporated in September, 1861, formed by the consolidation of the Social Company, owning the Gilligan Ledge and a 5-stamp mill, and the Steptoe Company, owning extensions on the Gilligan as well as several other ledges, and a 10-stamp mill, of which the frame is now standing at the lower end of the canyon, while the machinery is stored at Salt Lake City. From 1866 to March, 1868, the 5-stamp mill has been running on ore from the Gilligan Ledge, with sufficient profit to pay general expenses and the developing of the mine.

THE MILL

has about five stamps, weighing about 650 pounds each, which stamp dry, the pulverized ore being carried from the battery to the dust-chamber, which is above, by a fan-blower, thereby saving much dust; three Varney pans and two settlers, which give a capacity of about five tons per 24 hours. The motive power is a small 8-inch cylinder, horizontal working steam engine, which works the stamps, settlers and blowers (250 revolutions.) It is also used to run a circular saw, with which the company saw all the mining and building timber, fir and yellow pine, that they cut in the neighboring hills. Wood, as fuel, costs at the mill $3 50 per cord.

THE MINE

is opened by three shafts or inclines; the principal is worked by horse whim. This shaft was originally sunk in the ledge (which dips from 60 to 75 deg.) and consequently, with a varying inclination, 400 feet below the surface; but water coming in at the bottom in large quantities, the lower works were abandoned; the 300-foot level is now the lowest worked. From this depth up to within some 40 feet of the surface the incline has been enlarged and straightened, new timbers put in, and a cutting of 2-inch stuff throughout the greater part of its extent. This work has been progressing since the stoppage of the mill. Near the surface a body of ore has been stoped out to the northeast of the shaft, which yielded $18,000, averaging $200 per ton. From this point down to the 300-foot level no ore has been taken out except in sinking, but the vein is said to have maintained the same character throughout. On the 300-foot level drifts were run 150 feet southwest and 120 feet northeast. In the former the vein is very regular, being a broken quartz somewhat decomposed, colored with iron oxide, and showing some sulphurets of silver. It has a width of from 4 1-2 to 6 feet, so that the entire drift is in the vein, the hanging wall being remarkably clean and distinct, having a clay gouge of decomposed slate. The foot wall is not so distinct, the country rock seems to be impregnated with quartz and vein matter some distance from the vein. The vein has a small seam or selvage running through the middle, dividing it into two characters or classes of ore. The second or poorer class, which comes on the foot-wall, has hitherto been discarded for want of hoisting-power, and used to fill up deserted works, e. g., the incline below the 300-foot level is mostly filled up with this ore. Mr. O'Dougherty, the superintendent, assures me that the whole vein without assorting will run $50 per ton in the mill; that the richer ore often runs from $100 to $200, and a black clayey ore which occurs, still richer.

"To the northwest the vein maintains the same character, but within 20 feet of the present face it pinches to two or three wide, the quartz becoming whiter, more compact and less rich, resuming its former character, however, at the face. Take it altogether, this vein shows a remarkable regularity throughout. At 50 feet from the face a slope has been run up some 15 feet from the floor of the level, nearly to the face of the drift, which has been filled in with second-class ore taken from this drift. On the surface, to the southwest of the shaft, the vein has been stripped to a distance of 500 feet, passing a change in the formation from quartzite to chloride schist. It shows a uniform width of quartz of good appearance throughout, and is said to yield very well in gold toward the extremity. Three hundred feet to the northeast of the main shaft another shaft has been sunk in a sort of ravine or bend in the slope of the hill, to a depth of 120 feet, said to be in good ore, and here about eight feet wide. The quartz in the dump has a whiter, more compact appearance than that taken from the other shaft. It is intended to extend the drift on the 300-foot level to connect with the shaft, which will then be used as an air shaft.

"Eight hundred feet have thus been traced on the original ledge. The original location gives the company 1,600 feet, and extensions (1,600 feet, and 800 feet northwest) make their claim 4,000 feet long. About midway between the two shafts another has been sunk to the depth of 75 feet, said to yield good ore. From what I have seen, and from what I am told by Mr. Dougherty, whom I have every reason to believe, the mine seems to be one of great promise, having a very large body of ore in sight, which is easily worked, and yields a fair profit. I should judge they must have some 20,000 tons of ore in sight, estimating the vein to be nearly as uniform above as in the 300 foot level, say four feet thick and 200 feet in length. It is the intention of the company to erect a 20-stamp wet-crushing mill, with which they calculate to extract 70 per cent. of the bullion, to treat the ore for $12, and have an average yield from the whole vein of $40 per ton. For this it will be necessary for them to put up a new shaft-house and also steam-hoisting machinery. The ore for the past few months has yielded bullion 937 fine, being gold and silver in the proportion of 86 cents gold and $1 20 silver to the ounce, the ounce being worth $2 06.

"Mr. O'Dougherty assures me that the mine has paid its way since the commencement, through the profit on the ore extracted from the shafts and their few slopes, and reduced in their 5-stamp mill. Since the stoppage of their mill they have been incurring expenses without any corresponding income, to the amount of $12000.

"Below the town two men are running a small arasta by water-power furnished by the stream running out of the valley. They are crushing a gold-bearing quartz from a ledge higher up on the hills, north of the mouth of the canyon, called the Gold Canyon ledge. It is a clear white quartz, showing occasional specks of native gold. They crush about 500 pounds per diem, which yields them at present at the rate of $40 to $50 per ton. They have sufficient power to run stamps if they had them. As it is, they break up the ore by hand to the size of a filbert."

Humboldt.—The Unionville *Register* May 15, reports:—"That Col. Buckner and J. Woods, a few weeks ago, discovered a vein on the north slope of Cottonwood canyon, to which they have given the name of Cliffland. Work has been carried on diligently on the ledge since its discovery, and at the present depth, 20 feet from the surface, the ledge is well defined and four feet wide. Streaks of rich ore are occasionally found in the quartz, and the owners feel confident that a rich mine will be developed in the shaft before a depth of 100 feet is attained.....A change of rock was encountered in the Seminole tunnel on last Monday, and a body of water struck at the time. A stream of three or four inches of water continues to flow from the tunnel steadily, which is considered a favorable indication by miners.....Symptoms of reanimation are apparent in Humboldt Canyon. William Woolcock and others have commenced sinking a shaft on the Cornish ledge, in that district."

QUARTERLY RETURNS OF BULLION IN LANDER COUNTY.

The Austin *Reveille* reports as follows:—"We present herewith a table of the returns of mines in Lander county which produced bullion during the quarter ending June 31, as copied from the books of the County Assessor. Although the publication was delayed beyond the usual time the table is still incomplete, as it does not include the returns of the mill of the White Pine Company at Hamilton, which, as we were informed, did the custom work of that district during the quarter. As it stands the list is a barren one—a 'lame and impotent conclusion.' The returns of the Assessor are rougher than ordinary, and possess almost no value. The list comprises only 78 sources from which bullion was produced during the quarter, but we publish the names of only 25, as most of the remainder are designated by the names of individuals. All amounts of ore less than one ton are omitted in the table, but their product is embraced in the total yield of the quarter.

Mine or Company.	Tons.	Lbs.	Av. pr. T.
Blue Jacket	2	313	$120 76
Argenta	8	810	224 77
Esther	4	670	388 94
Magnolia	10	1,892	243 50
Fortuna	1	100	483 17
Harding and Dickman	10	1,610	400 65
Lane and Fuller	179	656	193 42
Manhattan Co.	192	1,790	96 91
do. do.	9	120	328 56
Monroe Co. (Eureka)	8	1,204	175 28
Maggie	1	864	101 75
Florida	6	554	352 13
Whitlach Yankee Blade	3	1,680	521 92
Wilbur	1	1,912	420 54
Russell and Givens	7	684	132 57
Silver Champion	3	964	106 61
South American	9	658	134 17
Timoke	1	1,256	230 55
Wisner	12	1,114	184 06
St. Louis (Cortez)	5	184	430 58
WHITE PINE.			
Bates and Jacobs	1	1,700	299 18
Eberhardt	480	....	237 44
Keystone, 1st class	14	491	2,154 50
do. 2d class	123	1,646	153 55
Mazeppa	11	1,312	37 87
Noonday	12	902	124 94

"The product is more meagre than during any quarter for a couple of years. The whole number of tons of ore returned by the Assessor is 1,201 against 2,687, for the quarter ending December 1869. The total value of these tons is $265,374, and the average value of the ore per ton is $220 90—the computations being in gold. The product of the mines of Lander hill and of the other parts of this district of Reese river is insignificant, although the average yield of the small lots of ore reduced is mainly high. White Pine figures are immensely behind those of the previous quarter, both as respects the number of mines which produced bullion and the amount and value of the ore reduced. For instance, in the last quarter of last year the Eberhardt produced 477 tons which gave the splendid average of $774 per ton in currency; the keystone, 80 tons, which averaged $554 per ton; the Hidden Treasure, 81 tons, which averaged $337 per ton; the Robert Emmet, 172 tons, which averaged $357 77 per ton; the Stonewall, 68 tons, which averaged $434 06 per ton; and the Aurora South, 368 tons, which averaged $145 per ton. Against these figures the Eberhardt produced during the first quarter of this year 480 tons, averaging $237 44 in gold per ton; the Keystone, first class, 14 tons, yielding the magnificent average of $2,454 20 per ton, and 123 3-4 tons, averaging only $153 55 per ton. The other mines enumerated—the Hidden Treasure, Stonewall, Robert Emmet, and Aurora South—do not appear in the Assessor's returns for the last quarter. The falling off in the product of the mines of Lander county, which included the district of White Pine up to March 31, may be accounted for perhaps by those directly concerned; but we shall not attempt the explanation. As we remarked in the beginning, it is palpably a barren product. But we have reason to believe the mines of both Lander and White Pine counties will exhibit improved figures for the present quarter. We have hitherto alluded to the slipshod manner in which these returns of mines were made by the County Assessor, in plain disregard of the letter and spirit of the statute, and in contempt of all rules of business; but if any one believes we exaggerated the case we refer him to the books of that office. But there appears to be no hope of improvement, and we must take them as we find them."

Sacramento.—Mr. J. C. Young writes from the Sacramento district to a friend in Austin:—"The assays of our ore made at Hamilton were satisfactory—eleven of which average $256 per ton. Since my return we have made a new strike about six miles south of this camp. The ore is pronounced by Belmont men, several of whom are here, to be stetefeldtite; but whatever may be its character it looks well. The gold-bearing ledges improve as we gain depth, and pieces that show free gold are common. I believe the day I discovered this place will prove a

lucky one. It is certainly a promising district. Besides our numerous locations upon silver and gold quartz, we have timber and water rights. Sacramento is attracting attention, and parties from Hamilton have already been here and examined property with apparent great satisfaction."

The Unionville *Register*, May 15, says:—"We learn from Christ. Lark that work will be resumed immediately on the Rochester claim, in Sacramento district. This location is on the Montana ledge, and is owned by an Eastern company. In consequence of the immense volume of water struck in the works work was suspended some time ago. To obviate all difficulty from this source in future, a pump of sufficient capacity to drain the works will be placed in the shaft. An engine for hoisting and pumping purposes is already on the ground. It is probable that the company will thoroughly prospect the Montana 'belt,' of which so much has been said, before they again suspend operations."

Reese River.—The product of the Manhattan mill for the month of April was as follows:—"Number of tons of ore reduced, 532; bullion produced, 109 bars, weighing 9,358 pounds, and valued at $139,822 51 in coin. The average yield of the ore is about $263 per ton. The whole of the ore reduced was produced by the mines of Lander hill, of which quite a number contributed small lots. "It will be observed that the mill, which is of the capacity of twenty stamps, averaged nearly eighteen tons per day—the ore being crushed dry and roasted. The *Reveille* says:—"We doubt if any mill of similar force, and reducing the same class of ores, ever gave a larger product of silver in one month; and we regard the result as highly creditable to the Manhattan Company and to this district."

Colorado.

The Central City *Register*, May 13, has the following account of mining operations in Trail Creek.—"This district, which has for two years past been almost deserted, promises the coming summer to be the scene of very active operations in mining and mill building. About one mile up the creek, Mr. A. S. Bennett is putting in a foundation for a stamp mill 32x38 on the ground, and one story high. He will run steam stamps and pans, on ore from the Cleaveland lode. This lode has not been developed to any great extent, but has the surface indications of a large, strong vein, and the surface rock is said to prospect very well in gold. Mr. Bennett proposes to work the mine by tunnelling into the hill on the vein, from near the level of the creek, back-stoping the ore out, and delivering it direct into the mill, which is to be located on the lode where it crosses the creek. His plans for mining and milling economically appear to be admirably arranged. A short distance above him, Dr. E. F. Holland has recently been mining on the Coyote and Kelley lodes, taking out some very rich ore. We saw at his office, several specimens, showing coarse, free gold in considerable quantities. He has a small reverberatory furnace in his mill for testing small quantities of ore and tailings by chlorination and by roasting and amalgamating. He also has a laboratory for assaying, and chemical analyses. Two miles further up, at the old town of Trail Creek, Judge Colvin is excavating for, and putting in a foundation for a ten stamp mill for the Colvin Gold Mining Company. The building will be of stone, 48x58 inside, and is designed for 20 stamps (though only ten will be put up at present), pans for raw amalgamation, and two Bruckner furnaces for roasting the best ores. The company's best mine is on the "Freeland" lode, the largest and best vein yet opened in the district, it having been worked on every claim but one for a distance of over 4,000 feet, and over 2,000 feet of it paid from the surface down to iron. The surface ore held out on different claims to a depth varying from 40 to 130 feet, and in some of them iron was not reached even at the latter depth. This company have four hundred consecutive feet on the lode, with four shafts, the deepest of which is over a hundred feet, and we are informed that in the bottom is a wide vein of good pay ore,—soft, brown gossan, with no indication of striking iron at present. The iron, or solid ore in the "Freeland" is more difficult and expensive to treat for its full value, than most of our Colorado ores, from the fact that it carries a considerable quantity of silver, nearly as much in value as of gold, and to work it profitably, it must be treated for both. This object Mr. Colvin expects to accomplish on the second class ores by the use of Blatchley pans, grinding the concentrated or blanket tailings from the stamps in the raw state. The first class ore will be roasted in the Bruckner cylinders, and amalgamated either in barrels or pans, as may prove most successful and economical. Judge Colvin is one of our oldest citizens—a '59er—and a whole-souled, jovial man, prompt and reliable in business affairs, and well versed in practical mining, having followed that business almost exclusively since he came here. We confidently hope to see him successful in his present undertaking. He certainly has got a good mine, and if he succeeds in treating the ore economically and saving sixty five to seventy per cent. of its value his ultimate success is certain. We understand that it is the intention of several parties owning mines in that district, to work them this summer. We saw John Schreiver at work clearing away the debris around his shaft on the "May Flower," preparatory to commencing work on it. Several parties were at work planting their gardens, repairing cabins, etc., as if intending to remain there, for this summer at least. There are several well known, valuable mines lying idle on that creek that might be successfully worked with a very small capital, and would add very materially to the amount of our bullion shipment. They have paid in days past, and may be made to do so again. Among the most noted of them are the Capital, Tennal, Holland, Champion, Kelley, Jefferson, Bosworth, Coyote, etc., some of which would be worked now if there was any market for the ores near at hand. This latter difficulty will, in a measure, be removed when the mills, now being built, are finished. One of the above, the Coyote, was successfully worked for more than a year, the miners hauling their ore to Black Hawk for reduction, and paying very high rates for both hauling and reducing. If the ore was rich enough to bear that expense and still leave the miners wages, it certainly ought to pay largely with a mill on the ground." ....From the same paper we take the following:—"Capt. McCannon informs us that California Gulch is the centre of considerable excitement, owing to the discovery of a wonderfully rich lode. A specimen of gold and quartz valued at five hundred dollars recently taken from it, is now on exhibition at the Colorado National Bank, Denver, and also about fifteen hundred dollars fine gold that had been panned from the crevice material during the past month or two. Granite—says the same authority—is flourishing finely, but the great impediment to their progress is the want of reduction works. One or two stampers are operating and doing well. Two or three new mills of this order are now being manufactured in Pittsburg, and will be on the ground about the first of July. He thinks the veins of that locality are rich and extensive enough to support a large population..... There were running yesterday, from the Kip mill down, embracing all the mills in Black Hawk, five hundred stamps. There are forty-five running in Lake Gulch, and twelve in Russel. In Nevada over a hundred are running. In Leavenworth Gulch and on Quartz Hill thirty-two stamps are running. In Eureka there are thirty stamps running, making a total of seven hundred and seventeen stamps running in the county. One hundred and more will be ready to run in a few days. The Polar Star mill is putting on an addition of twelve stamps. It is known as the Miller mill. The old abandoned creek claims on North Clear Creek, known as the Desmoineaux claims, in the upper end of Bay State District, are being worked. From that point up to Black Hawk, twelve companies are at work. The great want at the present time is transportation. There is abundance of ore for crushing and smelting, but only inadequate means of carrying it from the mines to the mills. Sid. Parent is opening the Andy Johnson lode, on Bobtail Hill. It pays five ounces of gold to the cord. Several new mills are in process of erection..... E. K. Baxter has sold 300 feet on the Vasa lode for $15,000. The purchasers are in the east....Mr. Christian, Philadelphia, is at Georgetown looking after the interests of the Brown Company, and its shipments of bullion.....The parties who had possession of Mr. Teats's mine for a few days have all been arrested and bound over for trial at the District Court. Mr. Teats institutes suits against them for damages. He goes to work again in his mine this morning. His difficulties have all been arranged." ....The Denver *News* says:—"There are many well known rich lodes on this hill (Silver Mountain) that have paid largely on the surface, among which are the Conqueror, Rosecranz, Tenth-region, Gold Dirt, Silver Mountain, Livingston County, Rup, etc., and there are several others that show large, well defined crevices, which, when deloped, will very likely prove valuable. Many of the best mines in the district are in the hands of eastern companies, who do not work them themselves and will not lease them to those who want to work them. This is unfortunate, not only for that particular district, but for the country at large, for if they were all working, it would make a very material addition to our monthly bullion shipments. Parties are arranging to start a new chlorination process for working gold and silver ores, in the Peck mill. They have a part of their apparatus already there, and hope to have the balance in season to start up about the last of this month. Messrs. Ball & Kerr are about starting up the Tennessee mill—intend to start about the tenth, and will run on custom ore from the Equator, Rup, etc. It is understood that the Knickerbocker Co.'s property—mill and mines—will be worked with renewed energy this summer. Mr. George C. Munson is the Superintendent."

British Columbia.

A correspondent of the *British Colonist* gives the following items concerning the Carriboo mines:—"At Perry Creek the weather was beginning to be favorable and mining generally was fairly started. Twenty-six companies were at work at date dodoing well. Shaw Compaay struck a nugget worth $80; Downey Company, a $28 piece. The results valued by the following companies three days previous to arrival: Downey Company, 50 oz.; Montgomery Company, averaged 10 oz. per day; the Jewelers Shop, $128 per share for three days' work; Price, $120 per share to same time; and others from an ounce per day up. Numbers of shafts are being sunk; none had struck bed rock, although a depth of 38 feet had been obtained. The mining at present is all confined to the canyon, and extends a distance of ten miles; but above this place will be a large amount of work done this ensuing season, the ground being located for four miles or more. There were between four and five hundred men on the creek. A slight rush came from Blackfoot this spring, but the creek being frozen and plenty of snow, nearly all returned. Although the rush is not so large as anticipated, still the miners from the various sections keep coming gradually and locating; this furnishes the surest sign of permanent camp. On Wild Horse Creek the miners were about starting and were making preparations to bring water in the various ditches for the hydraulics. Two miners, Henry Beck and William Botbejen, were killed on the 5th of April by the caving of a tunnel in which they were working. The accident caused universal regret in the mines, as both men were much respected This is the first fatal accident of the kind that has occurred since the Kootenay mines were discovered. Provisions were high, with a fair prospect of a downward tendency. Trains were arriving from Bitter Root and Walla Walla. Flour (last quotation), 30 cents; beef, 25 cents; sugar, 75 cents; tea, $2; coffee, $1; bacon, 75; beans, 40 cents; dried fruits, 75 cents; preserves in cans, $1; liquors were in good demand, particularly if in cases or bottles.....On Rock Creek the Flume Company were at work, having reached their new ground, and shares were selling high. With the exception of a heavy snow storm on Kootenay Mountains the weather was fine the entire trip. Trains would pass over Hope Mountain in about two weeks, there being only six miles of snow on the summit.....Mr. Burrill left Berkerville on the 22d instant, and rode out in a sleigh to Beaver Pass. There were four to five feet of snow on Beaver Mountain. The mining prospects were improving, and the general feeling on William Creek was one of confidence in the approaching season....On William Creek the Barker Company last week washed 96 oz.; Cariboo, 72 oz.; Canadian, 43 oz.; Baldhead, 40 oz.; Caledonia, 40 oz.....At Stout's Gulch the Coombs Company washed 80 oz. All the other companies are getting ready to work when the water increases... At Conklin's Gulch the Renfrew Company washed 60 oz.; Eclipse Company have just got their tunnel into their own ground, but have not got ready to work from it yet....On Mosquito Creek as the water inproves so do the prospects. The Minnehaha last week had 174 oz.; the Willow and Tabb are just commencing to work. Tom and Jerry, on Red Gulch, putting in machinery....On Hardscrabble Creek the Discovery Company continue working their tunnel, and are making small wages as they go on."

Central America.

We condense the following news from the Panama *Star and Herald* of April 8th: Writing from Managua, Nicaragua, March 23, a correspondent says:—Congress has exhibited more activity during the last few days of its sittings than during the whole session. The most important bill passed is that relating to mining, by which one of the greatest drawbacks to the proper working of the mineral riches of the country has been abolished, and absolute liberty is guaranteed to work the mines in any manner their owners think proper, always provided that the system followed does not endanger the lives of the operatives. It is not too much to say that by passing this new law, Nicaragua has doubled the value of all her mines, by providing that security of mining property which has hitherto been wanting. A measure of minor importance, which also passed this session, is a law authorizing the importation of Chinese laborers. The more enlightened section of the community now begins to see that immigration is needed to make the existing estates more valuable and convert the vast tracts of uncultivated lands of Nicaragua into productive districts. But there is no denying the fact that the bulk of the people regard immigration with great suspicion, and this may account for the strange manner in which the Government has met the proposals of the Mosquito bondholders, who, in liquication of their claims, would gladly take uncultivated tracts of land and bind themselves to colonize them. Even the importation of a few Chinese gave rise to very hot debates in Congress before it was carried. We are sorry that Congress could not pardon Captain White, of the Chontales Mining Company, who had the misfortune to be subjected to a brutal attack from a drunken countryman, whom he killed by the accidental discharge of his revolver, for which he has been condemned to three years imprisonment. So deeply do the people of Chontales feel his misfortune that they presented a petition for his release to Congress, signed by all the most prominent citizens and foreigners; but the Government refused to take the initiative in the matter, and so Congress, though most willing, could not act. Congress has ratified the contract between M. Chevalier and the Nicaraguan Minister for excavating a canal across Nicaragua. This has drawn forth a spirited protest from Mr. Felix Belly, who some years ago obtained a concession for making a canal, and whose concession is held to be valid by the French law courts, as shown by a recent trial.....By a decree of the 10th of March issued by the President, foreigners can in future denounce mines in Costa Rica without a special permission of the Government, in the form and under the same conditions as citizens of the Republic."

Idaho.

SCARCITY OF MINERS.

The Superintendent of the Casco Mining Company, at Red Warrior, Idaho, writes to a friend at Boise City as follows:—"We are now running our levels; will resume milling as soon as we can get a sufficient force of miners. At present there are none in South Boise." [White Pine has caught the most of the miners]....The Owyhee (Silver City) *Avalanche*, May 8, says of the Poorman mines:—"Work is now progressing in the south drift. The ledge at this point varies from 18 inches to two feet in width, and the ore is of an excellent quality. The capacious ore house is full, and they are now piling up rock in the engine house. There are at least three hundred tons on the ground. It is thought the road from the mine to the mill will be in condition for hauling next week."....The *World* of April 29 says of mining matters in the Basin:—"We have been told of a new kind of bogus or base gold dust which has been recently detected in this city. One of our business men, who daily receives a great deal of dust from various sources, from Chinamen as well as white men, has been victimized....The claims on More Creek, from town to about Walla Walla Flat, are actively worked, and between three and four hundred Chinamen are employed day and night in the mines.....We saw a snug sort of clean-up product yesterday, from the Sam. Thompson claim of Saunders, Wood, Noble, Elkins & Co., across Elk Creek, above Slaughterhouse Gulch, which weighed twenty-four and a half pounds... We learn from Centerville that the difficulty about the price of water between Mr. Goldtrap and the claim owners along the line of this ditch, and who receive their supply of water therefrom, is not yet composed....Information from Granite Creek camp betokens a very fair commencement of the season of mining. The sale of the Brainard claim, across the creek from the town, to a Chinese company, was not consummated, and the Brainard Company is working it to very good purpose. An offer of $50,000 for a claim of 1,800 feet, near the Brainard claim, owned by some Frenchmen, has been refused.... The Ben. Wilson & Co. ditch, Pioneer City, is now running pretty good heads of water to claims along its line for several miles, and mining has for this season progressed very favorably, but a large proportion of the claims have not as yet been fairly opened.

Missouri.

The Ironton *Enterprise*, May 20, says:—"We are glad to know that the Pilot Knob iron company are now engaged in reopening the iron mine on Shepard Mountain, with the intention, as we understand, of working the same extensively. The work already done has devevoped an immense body of fine specular ore, as rich as any obtained in this vicinity, and for some purpose far superior to any ore in the country. The most wonderful fact connected with this ore is its powerful magnetic qualities. The ore is not a mass of magnetic mineral, but a large portion of it contains the subtle and inexplicable power of attraction, some portions being so powerful as to be really wonderful."

Canada.

A correspondent of the Toronto *Telegraph* writing under date May 27th, says:—The Hodge Gold Mining Company of Mallorytown, put through their crush-mill last week about twenty tons of rock, four of which was very good. The remaining sixteen tons were of the poorest quality, merely surface rock; but as they were the first run through the mill they were not particular, as the pans were somewhat rough and required use before running regularly. Yesterday they ran it off and melted down, and to they surprise of all, they got eight ounces of the precious metal without resorting to the mercury. They have one of the best quartz mills in Canada, and all the good paying rock they can use for years."

COPPER.

Michigan.

The following April products have been received:

FRANKLIN MINE.	
Mass, barrel and stamps	85 tons, 1,536 lbs
PEWABIC MINE.	
Mass and barrel work	17 tons, 1,300 lbs
Stamp work	37 tons, 1,704 lbs
Total	55 tons, 1,004 lbs
OGIMA MINE.	
Mass	— ton, 432 lbs
Barrel	1 ton, 1,352 lbs
Total	1 ton, 1,784 lbs

TIN.

California.

THE TEMESCAL MINES.

William D. Brown, a gentleman who was engaged for some four months at the Temescal tin mines, furnishes the following information:—"The shaft is down over one hundred feet perpendicular in the main mine, and the drift is being pushed southwest on the vein, and also they are drifting northeast with good prospects. The vein matter is brown oxide of tin. The geographical formation of the surrounding country is the same as that of Cornwall, in England, and the best ore assays from 45 to 50 per cent. per ton. The vein dips about seventeen degrees to the north or northwest. There are about thirty-five good Cornish miners at work, and as there is plenty of capital to develop these mines, there is nothing to prevent that section of the country from being one of the most important, rich and populous of any in Southern California, but that curse to all improvement has not spared this rich section, as after being idle for years after the discovery of the mineral, and when the prospects were that

the hardy miners would reap a rich reward for their industry, we now find that suit has been instituted to recover a portion if not all of the land upon which these mines are situated. Our informant says that there is a peculiar hill thrown up in the immediate vicinity of the present works, resembling a sugar loaf, and indicates that it is the main culminating point of the tin matter, and the southwest drift is leading to this hill, where it supposed by the miners that they will strike there a large body of ore. The facilities of working is easy, and although water is to be found, it has not incommoded the miners. The company intend erecting extensive works as soon as the law suit may be decided, and they can, without the fear of having to finally lose their labor, develop the mine to a financial success. Our citizens are deeply interested in the success of these mines, as no doubt they will lead to extensive discoveries of a mineral of universal use, which hitherto we have not been able to discover in sufficient quantity for common use in any portion of the United States, and the importance of which can hardly be estimated in the future. Many other mines which have been examined by croppings, and which have been partially developed by the old claimants, show richer ore than the mine which the company are now working.

Missouri.

THE TIN MINES.

The Ironton *Enterprise* of the 20th inst. has the following remarks on the tin "mines" in Madison County, which continue to attract some attention:—"We have no hesitancy in warning persons to keep moderately cool over the reported discovery of tin ore in Madison County, some eight miles from our town. We know that such a discovery would be the most important of events in the mining history of this country, and if tin really existed in paying quantities, it would soon be known to a certainty by the production of the metal itself. This is the standpoint from which we have reasoned upon this question, and the failure to produce the metal has given reasonable grounds for doubting its existence in paying quantities. The fact, however, that the company owning and attempting to run these mines is badly managed, which has been patent to every person for some time past who has taken any notice of its affairs, may account for the failure to produce any metal. We are glad to know that there is a fair prospect for a change in the ownership and management of the mines, and if the present prospects are realized we may hope for an early decision on the practical value of the mines. On last Friday, Prof. Shepard, Professor of Natural History, Geology and Mineralogy in Amherst College, Mass., Prof. Tyler. Professor of Chemistry in Yale College, and Dr. Goulding of our town, gentlemen who long since have established reputations as among the most scientific men of the nation, visited these mines and spent the greater part of two days in examining the same, and in making assays of the ore. These gentlemen were highly pleased with the prospects, and the assays were most satisfactory, producing tin in greater quantities than is generally supposed to exist. It is certainly impossible to doubt such authority, and if the proposed change in the ownership of the mines is made, we shall hope for the grandest developments."

IRON.

Michigan.

The Marquette *Mining Journal*, May 19, says that reports from all the mines are of the most startling character. Some of them will double their product of last year, and all will show a most gratifying increase. The Champion and Foster, from which no shipments were made last year, will add at least 50,000 tons to the product of the district. A report on the commerce and manufactures of Cleveland shows that over one hundred furnaces draw their supplies of ore through that port. The receipts of Lake Superior ore at that place last year is set down at 257,608 tons. This year the amount will not fall short of 300,000.... A visit to Jackson a few days since revealed a most satisfactory state of affairs in every particular. The stock piles are of gigantic proportions, and all the openings are being worked to the very best advantage. Some new developments are in progress, among which we noticed the opening of a new, or rather recently discovered deposit of soft hematite, which is believed to be the most extensive of any found in the district. We noticed also that some explorations were being made in the hill south of Capt. Merry's residence, with what result we have not been able to ascertain. Our own opinion is, that more ore will yet be found in the Jackson than has ever been shipped from all the present openings on the location.....About 6,500 tons from the Cleveland mine have already been sent forward from Escanaba, and mining operations are progressing most favorably. The skips are now at work in No. 3, and permanent cars have been placed on the incline, from which a great deal of ore is being raised. The cars on the incline are made to empty their contents into pockets over the railroad track, from which the ore is easily transferred to the railway cars. The mine never looked better, and is indeed in a better condition for successful mining operations than ever before....A trial of Case's patent diamond-pointed drill was had at the Cleveland on Monday last. The result was not of a very satisfactory character, though it is barely possible that it may be made to work if given sufficient power..... It is reported that Capt. Johnson of the Superior has very nearly if not quite 50,000 tons ready for shipment. If such is the case, we may reasonably expect a largely increased product over last year.

COAL.

Nevada.

THE COAL FIELDS OF WHITE PINE.

The *Inland Empire*, a journal published in the White Pine mining district, has under date, April 29, the following account of the coal fields, which are exciting so much interest in that locality:—"A recent and careful examination of the coal fields, lying three and a half miles easterly from Hamilton, satisfies us that carboniferous deposits in that neighborhood are going to prove of immense benefit to the mining interests as well as to many subordinate industries appertaining to this district. Almost the entire surface of the country, for many square miles in that vicinity is covered with a bituminous shale, such as can be seen at many places nearer town, as well, also, as along the northerly and westerly slopes of Treasure Hill. Attracted by these evidences of coal, General Cadwallader and other parties made several excavations last fall along the western base of Mokomoke Hill; all of which tended to strengthen the presumption raised by the surface indications that mineral coal might be found by deeper exploration. But whether we succeed in finding heavy beds of this valuable mineral in such close proximity to our leading mines or not, it is now quite certain that such deposits will be met with at a point not more than three or four miles distant; the most favorable spot yet discovered being upon the quarter section of land where genuine coal was first found, now the property of W. G. Sanderson, the original discoverer residing upon the ground, and by J. M. Taylor and Louis Nathan, residents of San Francisco. This tract is scarcely more than three miles from Hamilton, and can be conveniently reached by the trail leading along the line of the Von Schmidt waterworks, soon to be superseded by an excellent wagon road now being graded along the entire route. The country in the vicinity of the coal measures, which consists of rolling hills, is well watered, abounding in springs and running streams which, in conjunction with an abundance of grass, renders it an excellent stock range. There is also a good deal of cedar, mahogany and pinon in this section, the latter tree growing to an unusually large size. The prevailing rock here consists of a carboniferous limestone, interstratified with a fine grained reddish sandstone, between which crops out along the sides of the hills the shale, which also cover the surface. These several strata, conformable in position, dip towards the west at an angle of about 40 degrees. Mixed with the shale in places is a species of lignite, varying in color from brown to black, and having a compact structure with an irregular hackly fracture. This appears to be impregnated with bitumen, emitting an oily substance resembling petroleum, and giving off an inflammable gas when heated. Much of the shale exhibits similar phenomena when placed in a fire, and burns freely. In the Sanderson-Taylor claim several small seams of true coal have been found at a depth of about twenty feet below the surface. This coal, which is of the best bituminous variety, burns with the greatest readiness and emits a fierce heat, leaving a residuum of fine ash in a film scarcely thicker than writing paper; while the coke resulting from burning the lignite and shade retains the size and shape of the original fragment. When burnt in large quantities they run together, leaving a residium resembling volcanic tufa or blacksmiths' cinders. A pile of these substances, amounting to several tons, having been fired four or five days before, was still burning when we visited the spot, though the flames that at first shot up a foot or two above the surface, could then only be aroused by stirring up the mass, which, still retaining an intense heat, sent off a column of heavy black smoke. The shaft being sunk upon this claim, and which has a height of seven by a width of eight feet, lies entirely in shale, lignite and genuine coal, nearly the whole mass being highly combustible—much of it upon being ignited and held in the hand will burn for several minutes like a candle. The hill at this point inclines towards the east at an angle of about 30 degrees, and the shaft being some 60 feet above its base, excellent facilities are afforded for opening up the coal mines, either by means of a shaft or tunnel. The present shaft will serve to prospect the mine, being of ample capacity for working purposes. The material penetrated is on all sides sufficiently compact and firm to obviate the necessity of timbering; though should this become necessary, there is an abundance of trees to be had close at hand suitable for supports. With the superior wagon road being constructed by the water company, coal could be transported from this mine to Hamilton in ordinary times at an expense not exceeding three or four dollars per ton, while the cost of mining it can, owing to the causes mentioned, never be large.

"That we should have so good a prospect of ample supplies of coal where the natural timber growth is so scant and the consumption of fuel likely to be so large is not less matter for congratulation on the part of the mining community than of the fortunate owners of this valuable property. Extending sonth from the Sanderson tract are two other quarter sections owned respectively by Allen Oliver and Barnes Collins, located at the same time with the former, and upon which the surface indications for obtaining beds of fossil coal are equally good, though but little exploratory labor has yet been done upon them. They are considered very valuable, and we are credibly informed that an offer of ten thousand dollars has been refused for them. The body of the coal-bearing lands appears to be in an easterly direction from these three tracts, being considerably further from the silver mines than the latter, and, consequently, of less value; though we hear of very liberal offers being declined for lands located several miles further off, and a number of the owners in that section have evinced their faith in the value of their claims by the expenditure of a good deal of money upon them. Quite recently a good article of coal has been reached in the shaft of the Swansea Company, now being sunk upon their claim near the road leading from Hamilton to Shermantown; where also there is much bituminous slate upon the surface, with other satisfactory evidences of the existence of coal below.

Shooting Down Quartz.

The Grass Valley *Union* of the 11th has the following curious bit of information:—"The unexpected apppearance of a piece of artillary on our streets last Saturday evening caused us to inquire whence it came. At the Eureka the gun is used to knock down quartz, when the miners are ready to hoist it out of the mine. For this purpose the gun is charged with powder, of course, and a projectile made of a slug of iron. The quartz to be brought down by the firing has already been taken out of the ledge and stowed in the gallery of the mine, where it becomes wedged by its own weight. When it wants to be dropped down into the place from whence it is shoveled for hoisting, the gun is fired at it, and it gets down with a rush. The old way was to explode a quicksilver flask in the pile with a long fuse; but this was dangerous, for the quartz might slide while a man was going up to place the tank. The projectile is always recovered, and so the expense is in the powder used. An old man-of-wars man has charge of the artillery used under ground at the Eureka, and he never fails to make a telling shot. Last Saturday the gun was kept saluting all day and until late in the evening, manned by a company of miners from the Eureka mine."

Water a Luxury.

The scarcity of water at Treasure City, in White Pine district, Nevada, renders it a costly luxury, in which none but the most favored may indulge. Only think of water at "eighty cents a gallon!"—about $2 a bucket. We fancy it would be a relief to a denizen of Treasure City to "kick the bucket." The following notice appears in the White Pine *News* of the 8th ult.: "Treasure City Water Company —Standart, Page & Co. will supply the citizens of Treasure City daily with fresh, clear spring water at eighty cents per gallon." Would it not "pay" some enterprising owner of a water fountain between Austin and White Pine to run a line of water wagons to Treasure City? There must be a fine profit-margin from zero to eighty cents.—*Austin Reveille.*

MARKET REVIEW.

FRIDAY EVENING, June 4, 1869.

Mining Stocks.—The decline in prices of the leading stocks this week is again very marked. Smith & Parmelee, was sold yesterday as low as $2,50; Consolidated Gregory, $2 65, and Quartz Hill, $1,00.

The following are the prices quoted at the board:

GOLD STOCKS.

	Bid.	Asked.		Bid	Asked.
Consolidated Gregory	2 55	2 65	Montana Gold	15	18
Grass Valley	45	55	Quartz Hill	1 00	1 05
La Crosse Gold	16	20	Smith & Parmlee Gold	2 60	2 70
Mariposa	23		N. Y. & Eldorado		
Mariposa preferred	49½	49½	Gunnell Gold	30	50
Rocky Mountain Gold.			Benton Gold	20	40

SILVER STOCKS.

Combination Silver		....	Quicksilver	15½	16½
Owyhee Mining		7 75	Atlantic and Pacific		
Midas Silver			Manhattan Silver		75 00

COPPER STOCKS.

Central			Davidson		20
Calumet			Hilton		....

LEAD STOCKS.

Walkill	13	20	Walkill assented	22	30

COAL STOCKS.

Cumberland	33½	36	Am. C. Co., bet. call		
Spring M. Coal, bet. call.			Lehigh & Susquehanna Coal	50	....

PETROLEUM STOCKS.

	Bid.	Asked.		Bid.	Asked.
Bennehoff Run	..		Rynd Farm	16	20
Brevoort	1 50	1 75	United Pet. Farms	15	20
Buchanan Farm	56		Union	....	....
Central	60	65	United States	90	
Clinton Oil		....	Sherman & Barnsdale	..	..
National		....	Second National	.. ..	.. ..
N. Y. and Alleghany	..		Bliven	.. ..	.. ..
Pithole Creek	1 60	2 00	Rathbone	..	.. 50
Home Petroleum	5 50	7 00	Northern Light	.. ..	..
Pacific Oil	..	....	Bergen Coal and Oil	.	..

MISCELLANEOUS STOCKS.

The following were the quotations at 1:45 P. M. to-day:

N. Y. Central	191½	....	Milwaukee & St. Paul	77½	....
Harlem	151	....	Mil. & St. Paul Pf	89½	....
Hudson River	153½	....	Ohio & M. R.	34½	....
Reading	98½	....	Western Union Tel	45½	....
Mich. S. & N. I.	113	....	Pacific Mail	82½	....
Wabash	76½	....	Mariposa Pref	49½	....
Pittsburg	102	....	Quicksilver M	15½	....
Northwertern	92	....	Adams Express	59½	....
Northwestern preferred.	104	....	Wells, Fargo & Co. Ex.	81½	....
Lake Shore	112½	....	American Express	39½	....
Rock Island	121½	....	U. S. Express	66½	....
Fort Wayne	156½	....	Merchants' Union Ex.	14½	....

Government Bonds.—There are few bonds changing hands, and fluctuations in the prices unimportant.

U. S. 6s, 1881, coupon	121½@	122	U S 5-20s, '65, new coup.	119½	119½
U. S. 5-20s, 1862, coupon.	122	122½	U. S. 5-20s, 1867, coupon.	119½	119½
U. S. 5-20s, 1864, coupon.	116½	117	U. S. 5-20s, 1868, coupon.	119½	119½
U. S. 5-20s, 1865, coupon.	118½	118½	U. S. 10-40s, ex. coupon	109½	109½
Currrency Pacific 6s	106½	107½			

Foreign Exchange.—Foreign exchange is rather firm, but both the demand and supply are limited. We quote:

Lon. (pr. bks), 60 dys	109½@	109½	Swiss	5.18¾	5.17½
Lon. (pr. bks'), sight	110	110½	Hamburg	35½	35½
London, prime com., 60 d			Amsterdam (bankers')	40¼	40¼
Paris (bankers'), long	5.18¾	5.17½	Frankfort (bankers')	40¼	40¼
Paris (bankers'), short	5.15¾	5.15	Bremen (bankers')	78½	78½
Antwerp	5 18¾	5.17½	Berlin (bankers')	70¾	71

Gold—The earliest recorded sale of gold was made at 137¼, from which the price advanced to 138¼, again returning to 138. Cash gold is in ample supply, and holders of coin pay 7, 6, 6¼, and 5 per cent. for having their balances carried until to-morrow.

The money market is without essential change, and devoid of any notable feature. The rate is 7 per cent. on ordinary stock collateral, and 6 per cent. on pledge of Government bonds.

In commercial paper there is little change either in the volume of business or rates, choice grades passing at seven to nine per cent,

Statement of business at the United States Assay Office, at New York, for the month ending May 31, 1869:

Deposits of Gold.	
Foreign coins	$15,000 00
Foreign bullion	55,000 00
United States bullion	705,000 00
Total	$775,000 00
Deposits of silver, including purchases.	
Foreign coins	$32,000 00
Foreign Bullion	20,000 00
United States bullion (gold)	20,000 00
Do., old coins	500 00
Do., Colorado	10,000 00
Lake Superior	3,000 00
Nevada	4,500 00
Total	$90,000 00
Total deposits, payable in bars	765,000 00
Total deposits, payable in coins	100,000 00
Total	$865,000 00
Gold bars stamped	441.130 00
Transmitted to U. S. Mint, Philadelphia, for coinage	316,546 00

The whole month of May has been uncommonly quiet in all branches of the metal business, which is in part owing to the violent fluctuations in gold.

Tin has been without wholesale transactions. The entire stock is held on speculation and not offered for sale; the dealers abstain from buying as long as possible, although their supplies are small. Straits is quoted nominally 31½@32c., Banca 34½c., Billiton 31½c., English 30½c., all below the cost of importation. The last sales of Straits to arrive were made at 32c.

Importations in May, 7,000 slabs Straits, and 20 tons English. From the East Indies 14,000 slabs are afloat.

The stocks amount to 15,000 slabs Straits,
1,000 slabs Banca and Billiton,

in all in Boston and N. Y. 16,000 slabs,
Against 32.250 slabs on the 1st June, 1868,
10,800 " " " 1867,
37,100 " " " 1866.

The English and Dutch markets continue unsettled by the severe fight between Bulls and Bears, but the statistics show the position of the article to be healthy.

The stocks in London and Amsterdam, including the tin known to be afloat were on the 1st May,
7,500 tons against 10,400 tons in 1868, 11,600 tons in 1867,
12,500 tons in 1866.

The shipments from the East Indies to Europe and America for the first quarter of 1869 show a total of 12,000 piculs against 17,200 piculs in 1868.
18,200 " 1867.
19,700 " 1866.

By telegram tin was quoted end of April, at Singapore, $32 50, equal to 34c. laid down here.

The last quotations from Europe known here are Banca fl 82 in Amsterdam, Straits in London 135s., and English 127s.

Spelter is nominally 6¼@6¾c., gold, for Silesian, with a jobbing business only.

Importations in May, 300 tons. Stock 700 tons, against 500 tons 1st June, 1868, and 700 tons same date 1867.

Copper has been dull, and rarely have the sales in any one month been so small as in May.

The Lake copper now arriving from the West has been previously sold,

and there is no pressure to sell. The quotations are 24c. for Lake and 23½c. for Baltimore. The manufacturers are at present well supplied by their purchases for summer delivery, but the consumption seems to be very good; 25 tons Detroit and 100 tons Tennessee have been bought for export to the Continent at 24c.

The English copper market has suffered a severe fall and the price is now nearly as low as at any time the last two years. Chili Bars are quoted £68, with a declining tendency.

Lead has improved a little in price, and no ordinary foreign can be bought for less than 6½c. gold.

Importations in May 3,400 tons, and deliveries for consumption 2,900 tons.

Stock on hand 1st June, 1,700 tons, against
4,400 tons " " 1868,
3,300 tons " " 1867.
2,200 tons " " 1866.

Petroleum—There is but little offering except at advanced prices; the demand for shipment is light; 90c. is bid for standard white with 30½c asked. We note sales of 900 bbls., in lots, at 30½c.; 1,000 bbls., for last half June, at 30½c.; 1,000 bbls, for first half July, at 30½c.; 1,000 bbls., for August, at 31½c.; 2,000 bbls., for July and August. at 31c., and 1,500 bbls. prime light straw to white on the spot at 25½c. Crude in bulk held at 14½@14½c., with sales of 1,000 bbls, in lots, at those prices. For Philadelphia delivery sales are 500 bbls. standard white, for last half June, at 30c.; 1,500 bbls. do. for July, August and September, at 32c.; 2,000 bbls. for July, August, September and October, at 31½c., and 1,000 bbls. for November and December, at 31½c.

Receipts for the week ending June 1	pkgs.	23,436
Exports for the week	galls.	1,492,457
Exports from Jan. 1st	do.	22,689,873
Exports same time last year	galls.	17,104,598

The following is the quantity exported from other ports, Jan. 1 to May 29.

	1869.	1868.
From Boston galls.	1,052,910	1,069,926
Philadelphia	8,328,052	11,825,865
Baltimore	475,441	802,793
Portland	....	93,471
New Bedford	....	....
Cleveland	....	....
Total	9,880,503	13,792,055
Total exports from the United States	33,847,319	31,216,033
Same time in 1867		22,510,085
Same time in 1866		20,334,189

Saltpetre—Crude is in moderate request, with sales of 300 bags at 10½c., currenc. Nitrate Soda is dull and prices favors buyers—we quote nominally 4½@4¾c., gold—the cargo of the Agnes, both crude and refined, just arrived, was sold some time since.

Lime—The market for Rockland continues firm, at $1 25 for Common and $1 50 for Lump.

Plaster Paris—White Nova Scotia Lump is firm at $4 50, cash.

Cement—The market for Rosendale continues in brisk demand $2, cash.

Zinc—We quote Dry American at 8@8½c.; Dry French, 12@12½; Sheet (Metal) 12½c.

The duty on sheet is 2½c. per lb.

THE IRON TRADE.

NEW YORK, June 4, 1869.

Again we have to report prices without change. There is little or no inquiry for Scotch Pig. The only sale we note is 100 tons Glengarnock, on private terms. The prices for American continues firm with even less inquiry, with moderate offerings. Sales are 100 tons White at $30, 4 mos. interest added, and 500 do. Charcoal Pig on private terms. Wrought Scrap continues in request, and we notice sales of 100 tons No. 1, from yard, at $47 50, and 100 do. ex. ship, at a private price, with 800 tons, 60lb., new English Rails, on private terms. Bar has not moved to any extent, and prices have not changed.

Lehigh Valley Iron Trade.

Pig Iron transported by the Lehigh Valley Railroad Co. for the week ending May 29, 1869:

From	Tons.	Total.
Carbon Iron do	30	
Lehigh Valley Iron Co	250	
Thomas Iron do	555	
Lehigh Crane Iron do	630	
Allentown Iron do	295	
Robert Iron do	60	
Glendon Iron do	890	
Bethl'm Iron Co	330	
Other Shippers	480	
Total		4,120

Market Prices.

NEW YORK, June 4, 1869.

DUTY.—Bars, 1 to 1½c. per lb.; railroad, 60c. per 100 lbs.; boiler and plate: 1½c. per lb.; sheet, band, hoop and scroll, 1½ to 1¾c. per lb.; pig, $9 per ton, polished sheet, 3c. per lb. Payable in gold.

DUTY ON STEEL.—Bars and Ingots, valued at 7 cents per lb. or under, 2½ cents; over 7 cents and not above 11, 3 cents per lb.; over 11 cents, 2½ cents per lb. and 10 per cent. ad val. (Store prices.)

Am. pig, fy. No 1, best,	$40 00@		
" " 2x frdy,	36 00	38	0
" Grey Forge	34 50	37	00
White and Mottled	32 00	34	00
Pure white for Cal. mar.	32 50	—	—
Scotch Pig, No. I, best bd	40 00	44	00
" " " outside,	40 00	—	—
Wt. No. 1Scrap f'm yd.	45 00	47	00
Ex ship	45 00	....	
Bar, Ref., En. & Am.	85 00	90	00
Bar, Sw's, as. sizes,gold	82 50	87	50
Old Rails	47 50	....	
R.R. Iron, For., fm Stock gold	54 50	55	50
R. R. Iron For., to imp.	55 00	00	00
" " Amer. at wks. currency	75 00	76	—
R. R. Iron, Am., deliv'd	78 00	80	00
Stt rails of any pattern at works, currency			
Solid Steel rls. For., gd.	95 —	—	—
Street Rails at works	85 00	—	—
Light rls. for mines &c. at works	$85 00@	—	—
Do. delivered here	....	—	—

STORE PRICES—Less 5 per cent.		
Bar, Swedes, ord'y sizes	— —	140 00
Bar, Eng. and Am., rf'd.		92 50
Bar, Eng. & Am., com.	85 00	87 50
Scroll	120 00	150 00
Ovals and half round	117 50	142 50
Band	117 50	— —
Horse Shoe	117 50	— —
Rods, ¼@3-16 inch	97 50	155 00
Hoop	125 00	180 00
Nail Rod, per lb	8¼	9¼
Sheet, Rus., as'd. Nos. (gold)	11¼	13¾
Sheet, s'gle. D & T. com	5¼	6¼
Rails, Eng., gold, ton	56 00	
Rails, American at w'ks	76 00	
STEEL.		
English, cast 2d & 1st qual.	18	@22
Eng. Spring 2d & 1st qual	9	11¼
Eng. Blister 2d & 1st qual.	11¼	19
English Machinery	12¼	15
Eng German 2d & 3d qual.	14	16
Am. Blister, "Black Diam'd,"	10¼	16
American, Cast, Tool "	19	—
American, Spring "	10	13
American Machinery "	—	13
American German "	10	13

THE COAL TRADE.

NEW YORK, June 4, 1869.

Affairs in the various coal districts have not materially changed position since the time of our last writing. The suspension continues, and as yet we hear of no fixed time for the resumption of operations: indeed, we learn that the operators, and particularly the huge corporation that govern the Lackawanna district, declare, that in all probability, they will not be ready to have the men go to work, when they (the men) are ready. The fact is, the miners will have a point to contend with that they have not calculated upon; the operators are to have the last act in this drama entirely to themselves, and as the men have had their say in starting *when they will work* and *when they will not*, the operators will have their say as to *what terms* they will, allow them to return to their labors. Prices for coal in this market cannot be fixed at the present time; fancy prices for a few stray lots that a purchaser "caught napping" need scarcely be quoted. Should a telegram come at this time that the miners had resumed work, the price of coal would in all probability be within 50 cents per ton of those quoted by us before the suspension was really a fact, and this advance would mainly be paid by those whose stock laid in, in anticipation of the present trouble, had proved inadequate. There does not seem to be any idea in the market that this suspension will create high prices, but rather that it will prove merely a regulator, and leave the market in a better condition, with coal at fair prices, which was the case before the suspension took place.

As yet the miners have not stated the terms on which they intend to resume work, but we believe that any terms founded upon the basis of a fixed price of coal at this point or elsewhere will be met by absolute refusal by the operators. When the miners funds have been reduced to the last shilling, and hunger and distress stare them in the face, we fear their courage will fail them, and they will not have accomplished anything by striking, other than to have put a few extra fortunes in the hands of those parties who had a large stock of coal on hand, and have been able to get the advance of a dollar and a half per ton during the past week. It is not very consoling for the miners to realize that not one cent of this profit will ever be turned to their benefit. They will see that they have this time been used merely as a "cat's paw." Surely there was some reason why this suspension was not strenuously opposed by the operators, and the answer will prove to be, that the advantage to be gained was on the side of the capitalist. It is not pleasant for us to show up this state of affairs, for our sympathies are with the workingman, and we are sorry that they should be so readily led astray by designing men.

That the constantly increasing surplus would have been checked in some way, there is no doubt. It may have happened that a reduction of wages would have been attempted by the operators, which would have had the effect of sending the men out, thereby accomplishing what the miners have done by the "suspension," but it would have been much more agreeable to the miners to thus have the disgrace of the strike on the shoulders of the capitalists than on themselves. The precedent established will prove disastrous to their union in the future, and further proves their leaders to be very short-sighted and untrustworthy.

It is very plain that the operators foresaw that too much coal was being mined and placed on the market to make the business remunerative, from their action in the early part of the season, in calling a convention of the interested carrying companies, to meet in this city, at which a plan was to be devised to the effect that each company should send only a certain portion of coal to the market. This project failed because one of the parties wanted to run off with the lion's share. The miners should have noticed the falling of this straw, which plainly showed the direction from which the wind was blowing.

It is not supposed that retail dealers want to buy any coal now, for there is none to be had. As soon as matters take a definate shape we shall venture an opinion as to what course they had better pursue.

The following will show the exports of coal from the port of New York for the week ending June 1st, and for the season to that date, also the amount exported last year for the same period.

Exports for the week	tons	204
Do. from January 1	do	34,489
Do. same time last year		20,108

PHILADELPHIA, April 3, 1869.

The market is dull—no shipments, and not much coal on hand. There is about 200 tons at Port Richmond. The Scranton folks are not shipping any coal to New York, all being engaged and consumed by one of the railroads in that section.

Parties here think that the men will go to work about the 15th.

The following table exhibits the amount of Coal that was passed over the various routes of transportation from the Pennsylvania Coal districts for the week ending May 29, 1869, and for the season to that date. A comparison is also made with the amount transported the corresponding week in 1868, showing the increase or decrease, as the case may be:

	1868.		1869.		INC. OR DEC.	
COMPANIES,	WEEK.	TOTAL.	WEEK.	TOTAL.	WEEK.	YEAR.
Phil. & Read. R. R.	74,838	1,259,935	1,051	1,257,647	d 73,787	d 32,288
Schuylkill Canal	31,395	283,604	....	180,530	d 31,395	d 103,174
Lehigh Valley R. R	57,304	1,043,057	955	1,069,108	d 56,348	i 26,071
Lehigh & Sus. R. R	18,489	123,919	158	333,760	d 13,331	i 209,840
Lehigh Canal	34,699	200,189	1,004	173,130	d 33,695	d 27,059
Scranton North	9,064	158,644	921	205,857	d 8,143	d 52,213
Scranton South	27,077	521,030	3,601	587,630	d 23,476	i 66,580
Penn. Coal Co. rail.	21,962	307,442	24,273	346,717	i 2,311	i 39,175
Penn. Coal Co. can.	590	6,006	716	4,391	i 126	i 1,615
Del. & Hud'n Rail.	....	....	464	98,041	i 464	i 98,041
H. & H. Can. north	35,403	342,735	35,870	358,661	i 267	i 15,926
D. & H. Can. south	....	....	....	43,585	....	i 43,548
Shamokin	13,378	169,298	1,271	137,991	d 12,107	d 31,307
Trevorton	351	7,147	....	7,054	i 351	i 1,093
Short Mountain	3,027	30,530	2,806	32,095	i 221	i 1,366
Lykens Valley Co.	2,239	32,176	1,459	20,006	d 781	d 12,169
Hunt'g'n & B'd T'p	5,570	89,516	7,006	129,799	i 1,136	i 40,283
Wyoming South	....	18,678	....	29,737	....	i 11,059
Wyoming North	....	....	....	....	....	....
Williamstown Col.	....	49,574	....	56,331	....	..
Total	330,686	4,668,880	81,555	5,072,070		
1868				4,668,190		
				403,880		

Lehigh and Susquehanna Railroad.

Report of Coal shipped for week ending May 29, 1869.

Total Mauch Chunk Region		67,528 55
" Hazleton		51,583 10
" Upper Lehigh		56,577 19
" Wyoming	981 06	252,509 03
Grand Total	981 06	428,199 15
Corresponding week last year	26,978 11	247,838 09
Increase		180,361 06
Decrease	26,002 10	....
Forwarded South from Mauch Chunk by Rail	152 17	301,338 13
Delivered on line of L. & S. R. R. ab've M'ch C'k.		13,861 08
Delivered to Lackawanna & Bloomington Railroad at Plymouth Bridge		12,459 11
Delivered to L. V. R. R. Co, at Sugar Notch		5,100 03
Delivered at Coal Port for shipment by canal	823 04	95,440 00
Total	981 06	428,199 15

Report of Coal Transported over Lehigh Valley Railroad

For the week ending May 29, 1869, and previously this season, compared with same time last year:

WHERE SHIPPED FROM.	WEEK. Tons. Cwt.	TOTAL. Tons. Cwt
WYOMING REGION.		
Franklin Coal Co	5 10	18,679 18
Audenried	....	
Lehigh and Susquehanna	....	
Germania Co	....	
Wilkesbarre Coal & Iron Co	....	595 15
Warrior Run	....	11,015 06
Parrish & Thomas	....	6,175 10
New Jersey	....	7,467 19
Union Coal Co	....	....
Wyoming Coal & Transportation Co	....	14,452 11
Newport Coal Co	....	....
Morris & Essex Mutual Coal Co	....	....
Consumers	....	....
Everhart Coal Co	....	....
Plymouth Coal Co	....	....
Hillman & Son	....	8,315 04
Bowkley, P & Co	....	44 18
Mineral Spring	....	12,960 10
Valley Coal Co	....	....
Enterprise Colliery	....	38,282 02
Burroughs	....	14,336 05
Washington Coal Co	....	....
West Pittston	....	180 16
Barclay Coal Co	....	....
Shawnee	....	5,641 17
Consumers Coal Co	....	4,890 01
Chas. Hutchinson	....	429 08
Harvey & Bro	....	2,015 15
Wyoming Valley	....	8,873 12
Henry Colliery	....	
Fall Creek	....	....
New England	15 12	8,402 14
Delaware & Hudson Coal Co		5,013 03
Maltby Colliery		1,344 07
Gaylord Colliery	97 15	2,119 12
Butler, H S M		
Tompkins	....	2,449 07
Chauncey Colliery	48 03	5,634 09
Ravine Colliery, P & E	....	
Maryland Anthracite		415 11
Rough & Ready		291 06
Rock Tunnel	....	
Butler Colliery	....	4,995 19
Other Shippers	....	33 11
Total Wyoming	167 00	185,361 09
Same time last year	4,098 19	117,293 19
Increase	....	68,067 10
Decrease	3,931 19	....
HAZLETON REGION.		
Central Coal Co	....	....
Ashburton Colliery, R. R. Carter	....	7,464 01
Mount Pleasant	....	5,603 14
Hazleton	....	110,622 08
Stockton—East Sugar Loaf	....	73,525 18
Mount Hall	....	....
Latimer (A Pardee, Jr., Bro & Co.)	....	36,879 11
Stout Coal Co	....	20,471 19
Harleigh	....	39,475 16
Evervale Coal Co	....	36,514 00
Jeddo, (G B M & Co)	....	50,514 11
Woodside, J C Co	....	6,378 17
Highland Coal Co	....	4,957 07
Cross Creek	....	17,195 15
Council Ridge	....	53,719 13
Buck Mountain	....	30,393 11
Other Shippers	....	114 19
Total Hazleton	....	496,580 11
Same time last year	24,820 15	481,212 17
Increase		15,617 14
Decrease	24,820 15	....
UPPER LEHIGH REGION.		
Upper Lehigh Coal Co	....	7,506 16
Same time last year	841 03	27,828 09
Increase		....
Decrease	841 03	20,321 13
B. M. REGION.		
Spring Brook	....	30,011 15
Honey Brook	....	41,889 14
German Pa. Coal Co	....	14,731 11
Spring Mountain	....	49,492 15
Coleraine	93 00	30,237 07
B. Meadow, D. W		61 01
John Connery		
Lehigh Zinc Co		....
Stafford D W		1,011 06
Other Shippers	265 14	1,068 05
Total B M Region	298 14	168,755 07
Same time last year	11,276 15	179,300 16
Increase		
Decrease	10,978 01	10,545 09
MAHANOY REGION.		
Mt Rose Coal Co		334 08
Mount Etna		1,681 03
Mahanoy Colliery	489 17	15,381 07
Coplay Colliery		22,538 13
Glendon Colliery		12,483 01
Primrose Colliery		14,511 03
E S Silliman		17,695 04
McNeal Co		8,107 19
Knickerbocker		11,524 04
Thomas Coal Co	....	
Mammoth Vein		3,024 01
New Boston Coal Company		11,492 10
Coal Mountain		675 01
Shamokin Coal Company		
Caledonia M & M		5,278 13
Richards & Humphreys		145 11
Other Shippers	....	9 17
Total Mahanoy	489 17	195,188 18
Same time last year	13,610 12	214 189 09
Increase		....
Decrease	13,120 15	89,000 11

WHERE SHIPPED FROM.	WEEK. Tons. Cwt.	TOTAL. Cwt. Tons.	PREVIOUSLY Tons. Cwt.
Total Mahanoy	489 17	125,188 18	124,699 01
Total B. Meadow	298 14	168,755 07	168,456 13
Total M. Chunk		124 04	124 04
Total U. Lehigh		7,506 16	7,506 16
Total Hazleton		496,830 11	496,830 11
Total Wyoming	167 00	185,361 09	185,194 09
Total	955 11	983,767 05	982,811 14
To L. & S. R., at Penn Haven for r'l.		4,174 00	4,174 00
Do. for Canal		54,056 18	54,056 18
At Mauch Chunk for canal		26,558 07	26,558 08
Total Anthracite	955 11	1,068,556 11	1,067,601 00
Susquehanna region Bit.Coal, F. C'k.		552 03	552 03
Total by rail and canal	955 11	1,069,108 14	1,068,153 03
Same time last year	57,303 18	1,043,037 14	985,738 16
Increase		26,071 00	82,419 07
Decrease	56,348 07	....	
Forwarded east from M. Chunk by r'l	922 11	950,018 02	949,095 11
Same time last year	54,648 04	1,019,825 10	965,177 06
Increase			....
Decrease	53,725 13	69,807 08	16,081 15

RECAPITULATION.

Forwarded east from M. Chunk by r'l	1,204 18	936,164 09	949,092 11
Delivered at Mauch Chunk	6 01	566 19	599 13
Del. on line of r'd above M. C'k	77 10	4,753 08	4,985 06
Del. ab. M. C. for use of L. V. railr'd.	984 02	21,043 06	23,652 18
To L. & S. r'd at Penn Haven for rail		4,174 00	4,174 00
Do. for shipm't by canal	181 01	32,278 19	54,056 19
At Packerton		2,495 08	2,516 19
At M. Chunk for shipment by canal	98 17	24,498 11	26,558 08
To N. C. R. R., at Mt. Carmel		2,516 09	2,516 09
Total	2,552 19	1,065,600 04	1,068,153 03

Lehigh Canal Coal Trade.

Shipped for the week ending May 29, 1869.

WHERE FROM.	TONS. CWT.	TONS. CWT.
Mauch Chunk Region		51,033 19
Beaver Meadow Region	181 00	23,690 00
Mahanoy Region		878 01
Hazleton Region		49,365 13
Upper Lehigh Region		2,088 14
Wyoming Region	823 04	45,474 03
Total	1,004 04	173,130 00
Corresponding week last year	84,699 10	200,189 00
Increase		
Decrease	33,695 06	27,059 00

Cumberland Coal Trade.

CANAL TRADE.—The following shipments by Chesapeake and Ohio Canal were made for the week ending Saturday, May 29—

American Company	4,244 15
Central	4,471 02
Consolidation	3,296 00
George's Creek C. & I.	1,355 17
Borden	1,748 06
Hampshire & Baltimore	1,200 05
Cumberland Coal and Iron	1,833 04
Midlothian	1,517 06
James Boyce	674 11
Total	20,341 03

By B. & O. RAILROAD.—The shipments over the Baltimore and Ohio Railroad, for the week ending May 29, were as follows:

From Cumberland and Pa. Railroad, via Cumberland	
Consolidation Company	3,889 15
Borden	1,574 00
Allegany	
Midland	
Midlothian	1,149 00
Balt. & Hamp	910 12
From George's Creek, via Piedmont.	
George's C. & I Company	2,212 13
Central	2,762 03
Atlantic	1,973 06
Savage Mt	
American	2,179 06
Swanton	553 14
Potomac	1,502 09
Piedmont	2,263 14
Franklin	759 11
Hampshire	2,646 18
Consolidation	
Barton	923 03
S. Mining	
From Eckhart RR.	
C. & I. Co.	2,792 08
Total	30,893 06

Schuylkill Coal Trade.

BY RAILROAD AND CANAL, FOR WEEK ENDING, JUNE 3.

	RAILROAD.	CANAL
St. Clair		
Port Carbon	183	
Pottsville	20	
Schuylkill Haven	147	
Auburn		
Port Clinton	467	
Company's use	426	
Total for week	1,243	
Previously this year	1,257,647	
Total	1,258,890	180,530
Same time last year	1,352,367	315,019
Decrease	93,477	134,489

Prices of Coal by the Cargo.

[CORRECTED WEEKLY.]

At New York, June 4, 1869.

Schuylkill R. A., choice	$ 6 00	$	Schuylkill Chestnut	$	5 00
" Ordinary	5 75	....	Lehigh W. A. Lump	6 00	....
" W. A. Lump	....	5 25	" Broken	5 35	....
" Steamboat	....	5 25	" Egg	5 35	....
" Broken	5 50	....	" Stove	5 65	....
" Egg	5 50	....	" Chestnut	5 15	....
" Stove	....	5 75	Shamokin	....	5 00

SPECIAL COALS.—DEALERS' QUOTATIONS.

Diam'd Vein R.A., Sch'kill	....	6 00			
Locust Dale W. A., "	5 75	....			
Honey Brook " Lehigh	6 00	5 15	Buck Mountain	5 50	
Harleigh " "	6 00	5 15	Fulton	6 00	5 15
Spring M'n " "	6 00	5 15	Stout	6 00	5 15
Sugar Creek " "	6 00	5 15	New England Red Ash		....
Sugar Loaf " "	6 00	5 15			

Dealers in these Coals may be found in our advertising columns.

At Philadelphia, June 4, 1869.

Lehigh L'p and St'mb't.	6 00	" Egg and Stove.	
" Broken and Egg	6 00	" Chestnut	
" Stove	6 25	Locust Mount Lump	
" Chestnut	5 50	" Steamboat.	
Schuylkill R. A.		" Broken	
" Chestnut		" Egg	
" W. A. Lump		" Stove	
" Broken		" Chestnut	

SPECIAL COALS.—DEALER'S QUOATTIONS.

Lorberry Coal	Burnside R. A. Egg & St.
Shamokin	
Franklin, (Lykens Val.)	Hill & Harris, Egg & St.
Broad Top	Henry Clay, Egg & St.

Dealers in these coals may be found in our advertising columns.

Powelton Coal at Philadelphia, June, 1869.

Powelton Egg and Stove	$5 50	Powelton Gas	$7 80
Powelton Semi Bituminous	5 25		

Scranton Coal at Elizabethport, June, 1869.

(Corrected weekly by D. L. & W. R. R. Co.

Lump	5 00	Egg	5 00
Steamer	5 00	Stove	5 50
Grate	5 00	Chestnut	

Prices for Pittston Coal at Newburgh, June, 1869.

(Corrected weekly by Penna. Coal Co.)

Lump, per ton, 2240 lbs.	....	Egg " "	....
Steamer, " "	....	Stove " "	....
Grate " "	....	Chestnut " "	....

70c. Freight to New York.

Lackawanna at Rondout, June, 1869.

Lump		Egg	
Steamer		Stove	
Grate		Chestnut	

65 cents Freight to New York.

Old Company's Lehigh Coal at Mauch Chunk.

May, 1869.

Lehigh L'p and Steamboat	$	Stove	$3 2
Broken and Egg		Chestnut	3 7

Lehigh Coal at Elizabethport, June, 1869.

Lump	....	Stove	....
Steamboat and Broken	....	Chestnut	....
Egg	....		

50c. Freight to New York.

Wilkesbarre Coal at Hoboken, June, 1869.

(Corrected by Wilkesbarre Coal & Iron Co.)

Lump	....	Egg	....
Steamer	....	Stove	....
Broken	....	Chestnut	....

45 cents Freight to New York.

At Baltimore, June, 1869.

Wholesale prices to trade.		Trevorton R. A	$ 5 40
Wilkesbarre by cargo or car load	$ 5 60	By retail, per ton of 2,240 lbs., delivered	8 00 8 50
Pittston and Plymouth	5 40 5 65	Georges C'k & Cumberland f. o. b. at Locust Point for shipping	.... 5 00
Shamokin R., or W. Ash	.... 5 40	West Fairmount Gas, f.o.b	.... 6 00
Lykens Valley, R. A	.... 5 65		

At Havre de Grace, Md.

Cargo prices for shipment *south* of Patapsco River, (drawback allowed of 10 per centum.)		Shamokin R. or W. Ash	$.... @....
		Lykens Valley R. A	....
Wilkesbarre and Pittston W. Ash	$.... @....	Trevorton R. A	....

At Georgetown, D. C. and Alexandria, Va.

George's Creek and Cumberland f. o. b .... @4 75

Prices of Gas Coals.

June, 1869.

PROVINCIAL. Duty, $1 25	Coarse. Gold.	Slack. Gold.	AMERICAN.	Coarse. Currency.	Slack. Currency.
Block House	$1 75 @$	75	Westmoreland Co	8 75	
Gowrie	1 75	75	Despard Coal Co	8 50	8 00
Lingan	1 75	75	Penn		
Sydney	2 13½	71½	Newburgh Orrel Gas	8 50	8 00
Pictou	2 13½	1 18½	West Fairmont Gas Coal		8 00
Little Glace Bay	1 50	1 00			
Caledonia	1 50	75			

Prices of Foreign Coals.

June.

Duty, $1 25 per ton.

Corrected weekly by PARMELEE BROS., 32 Pine Street, N. Y.

Liverpool Gas Caking	$ 9 50	Liverpool House Cannel	18 00 19 00
" " Cannel	14 00	" " Orrel	16 00 18 00

Per ton 2240 lbs., Ex. ship.

PRICES FROM YARD.

Liverp'l House Orrel, scr'd	$16@18	Liverp'l House Can'l, scr'd	$18 00 20 00

Per ton 2000 lb., delivered.

Coal Freights.

(Corrected Weekly).

Freights on Coal Sea-borne from Port Richmond, Philadelphia.

April, 29, 1869.— From Philadelphia and Reading R. R. Wharves, Phila., to

Bangor		New London	— — 1 80
Boston	2 50	Dover	— — 2 50
Providence	2 00	Cohasset Narrows	— — 2 50
Lynn	and discharging 2 50	Cambridgeport	— — 2 75
Portland	2 00 2 50	Dorchester	— — 2 50
Fall River	2 00	Fair Haven	— — 2 00
New Bedford	2 00	Gloucester	2 75
Salem	2 50	Lawrence	— — 3 00
Newport	— — 2 00	Old Cambridge	— — 2 58
East Cambridge	— — 2 50	Saco	— — 2 75
Newburyport	— —	Roxbury	— — 2 75
Portsmouth	— — 2 75	Salisbury	— — 2 75
Charleston	1 75 2 00	Greenport	— — 2 00
Danversport	and discharging 2 50	Norwich	— — 2 00
Amesbury	— — 2 75	Harlem	— — 1 45
Beverly	2 50	New Rochelle	1 30 1 40
Charlestown	2 50	Sag Harbor	— — 1 50
Hingham	2 50	Spuyten Duyvel	— — 1 35
Marblehead	2 50	Williamsburg	— — 1 35
Nantucket	— — 2 50	Jersey City	— — 1 35
Plymouth	— — 2 50	New Brunswick	— — 1 20
Provincetown	— — 2 25	Alexandria	— — 1 25
Washington	— — 1 25	Fredericksburg	— — 2 00
Calais	— — 2 75	Wilmington, Del	— — 75
Machiasport	— — 2 75	Bath	2 50
Hoboken	1 35	East Greenwich	2 00
Hyannis	2 25	Albany	1 95
Malden	27 5	New York	2 10
Nahant	and discharge 2 50	Troy	2 10
Weymouth	and towing 2 50		

Rates of Freight from Newburgh.

JUNE 5, 1869.

(Corrected weekly by the Pennsylvania Coal Company.)

EASTERN.

Stamford	$1 25	Dighton	1 60
Norwalk	1 25	Warren	1 60
Bridgeport	1 25	Pawtucket	1 75
New Haven	1 25	New Bedford	
Hartford		Boston	1 75
New London	1 85	East Cambridge	1 85
Norwich	1 45	Salem	1 75
Mystic	1 40	Newburyport	1 85
Stonington	1 40	Portsmouth	1 80
Sag Harbor	1 40	Rockport	1 80
Bristol	1 55	Saco	1 80
Newport	1 55	Portland	1 75
Fall River	1 55	Bangor	1 75
Providence	1 60	Bath	1 80

RIVER.

Rates of freight from Newburgh on "Pittston" Coal, by boats and barges of the Pennsylvania Coal Co., per ton of 2,240 lbs.

Troy and West Troy, if discharged above the bridge, or at at R. R. dock.	65c.
Troy and West Troy, except as above	60c.
Albany and Greenbush	55c.
Coeymans	55c.
Stuyvesant	50c.
Coxsackie (lower dock)	45c.
Hudson and Boston R. R. dock, Hudson, discharged to cars	50c.
Hudson (except as above)	40c.
Catskill, at mouth of creek	40c.
Saugerties, at mouth of creek	35c.
Barrytown	35c.
Rhinebeck and Rondout	30c.
Po'keepsie and New Paltz Landing	30c.
Fishkill Landing, Shurter's dock	20c.
Fishkill Landing, other than above	30c.
Cold Spring and West Point	30c.
Peekskill, river docks	50c.
Peekskill, through the bridge	45c.
Haverstraw, Peck's dock	45c.
Haverstraw, other landings	55c.
Nyack	55c.
Sing Sing and Croton Landing	60c.
Tarrytown, Pierrmont and Yonkers	60c.

The coal must be discharged with all reasonable dispatch, at the expense of the consignee, (except to Hudson & Boston R. R., when rate is 50 cents,) who shall also pay wharfage on the boat. Boatmen will tend guy while unloading. No extra expense will be paid by the company for towing or hauling boats beyond the points at which they are left by the regular tow.

From Rondout.

JUNE 5, 1869.

(Corrected weekly by D. & H. Canal Co.)

EASTERN.		RIVER.	
Newport	$1 45	Troy	55
Bristol	1 45	Albany	50
Fall River	1 45	Coeyman's	50
Hartford	1 65	Stuyvesant	45
New Haven	1 25	Coxsackie	45
Providence	1 50	Hudson Railroad	50
Bridgeport	1 25	Catskill	35
Stamford	1 25	Poughkeepsie	25
New London	1 35	Fishkill	30
Norwich	1 45	Cold Spring	50
Stonington	1 35	Haverstraw	50
Pawtucket	1 75	Nyack	50
Boston	1 75	Sing Sing	50
Portland	1 75	Yonkers	55
Bangor	1 80	New York	60
Bath	1 80		

Provincial Freights.

TO NEW YORK.		TO BOSTON.	
Sydney	$3 50	Sydney	$3 00
Lingan	3 50	Lingan	3 00
Cow Bay		Cow Bay	
Port Calidonia	3 50	Port Calidonia	3 00
Little Glace Bay	3 50	Little Glace Bay	3 25

From Elizabethport and Port Johnson.

Albany	$1 00@	— —	New London	$1 15	— —
Boston	1 75	— —	Newport	1 40	— —
Bridgeport	1 —	— —	New York	50	— —
Fall River	1 40	— —	Norwalk	1	— —
Hartford	1 50	— —	Norwich	1 25	— —
Hudson	1 00	— —	Pawtucket and towing		— —
Wareham		— —	Portland	1 75	
Middletown	1 25	— —	Portsmouth	1 75	
New Bedford	1 40	— —	Providence	1 40	— —
Newburyport	2 00	— —	Salem	1 75	— —
New Haven	1 00	— —	Augusta	3 00	— —
			New Orleans	3 00	— —

Foreign Freights.

New Castle and Ports on Tyne			£15@£18 keel.
Liverpool			18@20s. ton.
Australian	9 50@10 00	Lehigh	15 50@16 00
do. Wallsend	10 00 10 50	Liverpool	13 00 " ...
Bellingham Bay	11 00	Pittston, ton	14 50 15 00
California	7 00 9 00	Scranton	14 00 15 00
Cumberland cks	30 00 32 00	Scotch	13 00 ....
do bulk	28 00	Vancouver Island	12 50 ....
Chili	10 00		

Rates of Transportation to Tide Water.

[BY RAILROAD.]

To Port Richmond, Philadelphia.

Philadelphia and Reading Railroad, from Schuylkill Haven $2 00

The following are the drawbacks allowed on all coal shipped East of New Brunswick and South of Cape Henry, until further notice.

	Drawback.	Freight.	Nett
Lump	90	$2 ..	$1 10
Steamboat	90	2 ..	1 10
Broken	70	2 ..	1 30
Egg	70	2 ..	1 30
Stove	50	2 ..	1 50
Chestnut	70	2 ..	1 30

From Port Carbon, 8 cents per ton more.

To Elizabethport.

L. V. Railroad from Mauch Chunk to Easton	$ 81
C. R. R., N. J., Easton to Elizabethport	1 22
	2 03
Shipping Expenses at Elizabethport	25
Total	2 28

To Port Johnson.

L. V. R R	$ 81
C. R. R. of N. J	1 29
Shipping Expenses	25
Total	2 35

To Hoboken.

L. V. R R	81
Morris & Essex R.R	1 29
Shipping Expenses	25
Total	$2 35

[BY CANAL.]

To New York (Morris.)

Lehigh Canal Tolls	40
Morris Canal Tolls	45
Freight	$1 55
Towing	10
Total	$2 50

To New York (Delaware and Raritan.)

Lehigh Canal Tolls	40
Delaware Division Tolls	30
Delaware & Raritan Tolls	35
Freight	$1 25
Towing from New Brunswick	20
Total	$2 50

To New Brunswick for Re-shipment.

Lehigh Canal Tolls	40
Delaware Division Tolls	30
Delaware & Raritan	35
Freight	$1 05
Shipping	25
Total	$2 35
Drawback	10
	$2 25

Copper Stocks at Boston.

BOSTON, June 4, 1869.

The following are the prices of mining stocks bid in Boston this day:

Copper Falls	8¼	Quincy	25
Franklin	18	Cary Improvement	8½
Hancock	4	Hecla	85
Minnesota	1	Bos. Hart. & Erie R. R.	23½
Calumet	50	Isle Royal	..
Water Power	16¼		

SAN FRANCISCO STOCK MARKET.

A telegram from San Francisco, dated May 29, quotes:

STOCKS.	Per Sh.		SHARES.	Per Sh.	
Gould & Curry	124@		Belcher	21	
Savage	117	116	Imperial	101	98
Chollar Potosi	391	422	Alpha	33¾	32
Hale & Norcross	178	...	Amador		..
Crown Point	69	62	Kentuck	246	245
Yellow Jacket	75		Ophir	26¼	27

DIVIDENDS—Chollar Potasi S. M. Co. $15 coin per share. Payable 5th instant.

Bullion Overland.

The Austin, Nevada, *Reveille*, May 15, commenting on the shipment overland to this city by the Superintendent of the Manhattan Company of 55 bars of silver bullion, weighing 4,747 pounds, and valued at $70,739 80, remarks:—"This is the third considerable shipment of bullion which has been made from this city overland to the Atlantic, and the incident may indicate the channel through which the bullion product of the central part of the State will flow to that seaboard. To money 'time is money'—a matter of tangible interest; and unless the rate of shipment to the East by railroad and ocean is reduced, we believe the silver bricks of central Nevada will be sent overland."

Capital for White Pine.

The *Inland Empire* notices the arrival, in Hamilton, of several persons of capital, among whom are Thomas Gass, E. G. Hays and Capt. E. S. Blaisdell, who come direct from Indiana to assist in developing the mines of Treasure Hill. The *Empire* gives the miners there some good advice. It says every facility should be afforded men of means to thoroughly investigate the true merits of the mines, and not to try to sell them mines which have no merit; in fact, not to try to sell them mines at all. If they want to buy they will make it known.

TO CLEAR A ROOM OF MOSQUITOES.—A writer in a South Carolina paper says:—"I have tried the following, and find it to work like a charm. Take of gum champhor a piece about one-third the size of an egg, and evaporate it by placing it in a tin vessel, and holding it over a lamp or candle, taking care that it does not ignite. The smoke will soon fill the room, and expel the mosquitoes. One night, I was terribly annoyed by them, when I thought of and tried the above, after which I never saw nor heard them that night, and the next morning there was not one to be found in the room, though the window had been left open all night."

—There is a spring of clear, cool, sweet water in the mine of the James River Cement Works, Virginia, the use of which has cured several cases of chronic dysentry of twelve months' standing. The workmen who use it are never troubled with this usual complaint of miners.

—One cause of railroad accidents has been discovered in England. It is what is known as color bliudness. An engineer ran his train into another, causing great damage. On investigation it was found that he could not distinguish red from green, and had mistaken the signal lights.

—Over 50 new bridges to replace temporary bridges on the Union Pacific Railroad have been built at Chicago and shipped and put up this season, and new ones will be completed over the whole line in 60 days.

—The New York *Sun* says the immortal hammer which drove the last spike in the Pacific Railroad is now on exhibition in seventeen of the principal cities of the United States.

—A bridge on the Jeffersonville and Indianapolis Railroad, 160 feet long, was recently burned down, and rebuilt so that the trains passed over it in eighteen hours.

—Prof. J. Ville finds that the waters of certain lakes in Tuscany contain a large quantity of sulphate of ammonia.

AMERICAN

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PHILADELPHIA OFFICE.—GEORGE E. CUMMINGS is our sole agent in Philadelphia, Pa., for the AMERICAN JOURNAL OF MINING, our new paper, the MANUFACTURER AND BUILDER, and our Spanish paper, EL CORREO HISPANO-AMERICANO. His address is 154 South Fourth street, Philadelphia, Pa., where all information respecting communications, subscriptions and advertisements for these papers will be gladly given to those who may wish to favor us with a call.

In making remittances for subscriptions, always procure a draft on New York, or a *Post Office Money Order*, if possible. Where neither of these can be procured, send the money, *but always in a registered letter*. The registration fee has been reduced to *fifteen cents*, and the present registration system has been found by the postal authorities to be virtually an absolute protection against losses by mail. *All* Postmasters are obliged to register letters whenever requested to do so.

NEW YORK, SATURDAY, JUNE 5, 1869.

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ANSWERS TO CORRESPONDENTS.

REVIEW OF THE IRON TRADE.

REVIEW OF THE COAL TRADE.

MINING AND OTHER STOCKS.

METAL MARKET.

NOTICE TO CORRESPONDENTS.

In consequence of a new regulation recently adopted by the Postmaster of this city to facilitate the early delivery of mail matter, we have to request our correspondents, in addressing us, to give the number of our post-office box, No. 5,969, in lieu of, or in Connection with our business office address. Also, write JOURNAL OF MINING, instead of *Mining Journal*, to ensure safe carriage.

THE RENSSELAER POLYTECHNIC INSTITUTE OF TROY.

The guardians of this old school of science are making vigorous efforts to perfect and enlarge its sphere of usefulness, by securing for it a pernanent fund, which will place it entirely beyond exclusive dependence on the tuition fees. The trustees and faculty are now canvassing the City of Troy with the view of raising a preliminary sum of $50,000, which work finished, they purpose soliciting aid from their friends in other and larger cities, where this institution is known, through its graduates, even better, perhaps, than it is in Troy.

Comprehensive plans and estimates for the enlargement of buildings, for the development of existing courses of Civil Engineering, Mining Engineering, and Natural Science, and for the establishment of new ones long contemplated, Mechanical Engineering and Architecture, for instance, have been submitted to the trustees by the faculty, and will, in all probability, be successfully carried out, as soon as the work of securing a proper endowment has been completed.

The graduates, also, of this institution are, it seems, organizing a movement in its behalf. A circular signed by several of their members was issued in the earlier part of last winter, broaching the idea of establishing an association of the Alumni. This has been recently followed by the following one:

CIRCULAR NO. 2.

The number and spirit of the replies already received in answer to Circular No. 1, issued by the undersigned, and proposing a general meeting of the graduates of the institute, indicate, beyond all doubt, the existence of a strong and general desire among the graduates to form themselves into a permanent association; and afford abundant assurance of a large attendance at the first meeting, which will take place on the 22d and 23d of June.

While all that may be done for the entertainment of the attending graduates cannot now be stated in detail, we are happy to announce that public addresses by distinguished scientists may be expected, as follows:

On Tuesday evening, June 22d, by Prof. B. WATERHOUSE HAWKINS, of New York, on "*Unity of Plan and Evidence of Design in the Animal Kingdom.*"

On Wednesday evening, June 23d, in connection with the commencement exercises of the institute, a lecture on "*Modern Engineering*," by Hon. WM. J. MCALPINE, Civ. Eng., President of the American Association of Civil Engineers.

JAMES HALL, S. EDWARD WARREN, CHARLES MCMILLEN, CHARLES DROWNE, DASCOM GREENE, WILLIAM FENTON.

This association will be the first one, we believe, springing from a purely technical school. There seems to be a peculiar appropriateness in this, in view of the fact that the Rensselaer Institute is the pioneer of scientific schools in this country. And in addition to the warm interest with which, in common with other friends of this school, we regard any attempt to increase its prosperity and usefulness, we entertain the hope that the contemplated association will add to its expressed aims or purposes that of promoting the scientific culture of its members. With a membership of 300 or more, composed for the most part of persons engaged in scientific pursuits, the association ought surely to contain an amount of interesting and instructive experience, which would prove valuable, not only to the Alumni, but through them to the professions which they represent.

PRESSURE NO FORCE.

We see new evidence every day of the necessity of the distinction, to which we have several times called attention, between the terms weight, pressure, force and power. By weight we mean simply a certain amount of ponderable matter. This may exert a pressure proportional to the weight; but a spring, either of steel or of compressed gas, may also exert a pressure; and in neither case is any force produced unless there is motion; that is, unless the weight descends, the spring uncoils, or the gas expands; a certain number of pounds may therefore be adoped as the measure of pressure; but to call it a "force" of 10, 20 or 100 pounds, as the standard works on mechanics are still doing, is a grave error, which should be corrected.

We speak of a pressure of 40 pounds to the square inch in a steam boiler; and no body would call this a force of 40 pounds; yet manuals of mechanics habitually talk about forces of so many pounds, and we are so accustomed to this expression that we do not always notice its inaptness. The idea of force includes that of motion: 100 pounds moving two feet exerts double the force of 100 pounds moving one foot in the same time; and, in general, we compare different forces by multiplying the weights into the distances they respectively move in a given time.

We have remarked before that this confusion of pressure with force has given rise to many attempts at perpetual motion, and other absurd mechanical contrivances. The last one we have heard of is a repetition of the attempt to utilize the upward pressure of the sea on the bottoms of floating vessels for the purpose of propelling them. The person who has made this alleged discovery is said to be an intelligent man, but he reasons on the hypothesis that force and pressure are equivalent terms; and his false premises lead him, of course, to a false conclusion. The upward pressure of the water on the bottom of a vessel is equal to the weight of the vessel; so long as the equilibrium is maintained there is no motion. If the vessel is allowed to sink, the force of the sinking may be, in part, converted into propelling force, as it requires no great ingenuity to change the direction of a force. The vessel may be made to go forward as long as it continues going downward; but then it will take just as much force to raise it as it has exerted in sinking, and this force might better have been applied directly to produce forward motion. It is exactly like sliding down hill on a sled and then pulling the sled up again.

It is unfortunate that our school books do not explain these matters in a plain, common-sense way, so that boys might get as clear notions of mechanical principles as of grammar. It would save much valuable time, and prevent many bitter disappointments.

Mica for Microscopic Objects.

It is amusing to observe the arrant nonsense to which men give utterance when they attempt to write upon subjects of which they are profoundly ignorant. One of our contemporaries, in describing the uses to which mica may be put, recommends it as "serving well for covering microscopic objects." A century ago it was valuable for such a purpose, because nothing better was known, and we have some old slides, made of ivory, in which the objects are enclosed between two plates of mica. But such a method is entirely worthless with our modern microscopes. The great value of these consists in their almost perfect definition, and mica entirely destroys, or, at least, greatly injures this. The only material used by modern microscopists for covering objects is glass, which is prepared expressly for the purpose in plates, so thin that some of them do not measure more than the 1-2000th of an inch in thickness.

—Recent correspondence from Virginia City and Gold Hill, Nevada, states that the small pox continues to ravage both places, and the only wonder is that it is not much worse than reported. Patients with this fearful disease are allowed to remain in their own homes, by hanging out the typical yellow flag.

—During the past year, one thousand one hundred and twenty-seven persons died in India from the effects of snake bites.

Errata.

Owing to the absence of the editor, several misprints occurred in the editorial matter of our issue of May 22d. In the article on "Unification of the coinage," Mr. FORNEY is mentioned as a member of the committee for testing the coinage. The name should have been TORREY, the reference being to Dr. JOHN TORREY of the U. S. Assay Office in this city. It is not to be supposed that Mr. FORNEY, with both dailies on his hands, could find time for the arduous duties of this committee at the mint.

In the same article it is said that the weight of the double eagle should be altered from 33.4362 to 33 3-4 grammes. The latter number should be 33 1-3, as the context shows.

In the article on "Blast Furnaces Abroad," for Mr. GEO. ASMERS, read Mr. GEO. ASMUS; for "Stonebridge" brick, read "Stourbridge" brick; and for "Garnkerk," read "Garnkirk."

Japanese California-bound.

Our exchanges bring us word that the first instalment of a Japanese immigration to the United States has made its way to Californa. It is said that they will bring mulberry trees, tea and the Bamboo plants, and make arrangements for the immediate cultivation of the same. There is certainly plenty of room on our Pacific slope for all that please to come, and if their coming serve to augment the number of our industrious classes, cheapen labor, and increase the variety of our agricultural products, in the end it must tell largely and beneficially upon the mining interests of the West. Chinese, Japanese, or what not!—so that there be no check to the progressive spirit that marks so characteristically the era of the nineteenth century.

NEW PUBLICATIONS.

THE RESOURCES OF MISSOURI AND THE NATURAL ADAPTATION OF ST. LOUIS TO IRON MANUFACTURERS. By SYLVESTER WATERHOUSE, of Washington University.

This pamphlet, which was published originally in 1867, has recently been enlarged by an appendix on the adaptation of St. Louis to iron manufactures. It contains much that is interesting, from which we select some principal facts. The experiment in manufacturing iron at Carondelet affords the data for Professor WATERHOUSE's conclusions. In the first place, the quality of the pig iron made there is pronounced good by a number of presidents of companies engaged in manufacturing articles of hardware. Then, as to the cost of manufacturing, the pamphlet speaks as follows:

"In order that eastern and foreign manufacturers may not be compelled to rely upon mere assertions, the data for their own calculations are given.

The distance of Carondelet from St. Louis is	6½	miles.
" " " Irondale	63	"
" " " Iron Mountain	74½	"
" " " Pilot Knob	80	"
" " " Big Muddy Coal Mines	120	"

"The following statement of the cost of making one ton of pig iron at Carondelet is not an estimate, but an exhibit, copied from the books of the company, of the actual working expenses of the furnace during one week.

1.50 tons of Iron Mountain ore, at net cost of $5 50 per ton	$8 25
1.22 " " Big Muddy coal, " " 5 25 " "	6 40
.30 ton of Connellville coke, " " 9 00 " "	2 70
.37 " " limestone, at $0 90 per ton	33
.08 " " mill-cinder, at $2 50 per ton	20
Clay and sand	12
Labor	5 50
Interest, taxes and insurance	1 50
Total cost of one ton of pig iron	$25 00

For the purpose of comparison, the subjoined table is given, furnished by one of the largest iron works in Pittsburg, Pa.

Per cent. of iron in ore, 66	
1¼ tons of ore at $11 per ton	$16 50
80 bushels of coke at 7 cts. per bushel	5 60
½ ton of limestone at $2 50 per ton	83
Labor	4 00
Interest and taxes on $200,000 invested for an annual production of 20,000 tons of iron	80
$5,000 per year for repairs and incidentals	25
Total cost of one ton of pig iron	$27 98

"For ores containing but 57 per cent. of metal, add ½ ton."

The cost of materials for furnaces is thus stated:

"Common red brick can be bought at Carondelet in unlimited quantities for $7 to $8 per thousand.

"Good clay for the furnace and sand for the pig bed are procured from neighboring banks at the sole expense of hauling and handling.

"The fire-rock for the furnaces was formerly brought from remote States. These hearth-stones, imported at a very heavy expense, seldom lasted more than five months. But, a few years ago, a geological examination discovered a superior quarry of infusible sandstone in the immediate vicinity of the Iron mines. This fire-rock is refractory, and sometimes resists the heat of the furnace 18 months. A full set of hearth-stones, consisting of 13 pieces, costs in place $250. The value per cubic foot, dressed and ready for use, is about $1 45.

"An excellent limestone for flux is procured within a few rods of the present furnaces. The quantity is inexhaustible. The price is $4 per 100 cubic feet."

The supply of iron is mainly from Shepherd Mountain, Pilot Knob and Iron Mountain:

"Shepherd Mountain is 660 feet high. The ore contains a large percentage of iron. The height of Pilot Knob above the Mississippi River is 1,118 feet. Its base, 581 feet from the summit, is 360 acres. The upper section of 141 feet is judged to contain 14,000,000 tons of ore. The elevation of Iron Mountain is 228 feet, and the area of its base 500 acres. The solid contents of the cone are 230,000,000 tons. At the depth of 150 feet, the artesian auger was still penetrating solid ore. These mountains contain enough iron above the surface to afford for 200 years an annual supply of 1,000,000 tons. The iron is strong, tough and fibrous.

"The Iron Mountain ore is a specular oxide. The ore of Pilot Knob is a silicious specular oxide. It contains from 10 to 20 per cent. of silica. The ores of Shepherd Mountain are specular and magnetic oxides. The magnetic oxide is least abundant. The ore is very pure. It contains less than 2 per cent. of silex and alumina."

ANALYSES OF ORES.

	Iron Mt.	Pilot Knob.	Shepherd Mt
Silica	.66	12.03	1.04
Alumnia	.00	1.61	.60
Peroxide of Iron	99.33	86.07	98.30
Iron	69.55	60.27	68.83

The coal is described as follows:

"The Big Muddy Coal mines are situated in Jackson County, Illinois. The company which works them owns 10,000 or 12,000 acres of coal fields. The distance of the mines from the Mississippi River by rail is 18¾ miles, and from Carondelet 113½ miles.

"The depth at which the coal used for smelting iron is found varies from the surface where it outcrops to 200 or 300 feet. The second and third beds of coal are separated from each other by a deposit of fire-clay from 1½ to 3 inches thick. If these two seams, which are nearly equal, are taken together, their aggregate thickness is about 5 feet 10 inches. The following description of this coal is given in the Geological Report of the State of Illinois:

"'The coal worked out of the bank of Murphysboro (near the Big Muddy

mines) has a beautiful appearance. It is hard, compact, free from sulphuret, and of excellent quality.'

"The Big Muddy coal sustains the burden of the furnace very well. At the Carondelet works, this coal has been subjected to a blast of 600 deg. or 700 deg., with a pressure of 5 pounds to the square inch. Under this severe test, the coal maintained its form and burden with a success that justifies the constant use of a blast of the same temperature with a pressure of 3 or 4 pounds to the square inch.

"The so-called Chester Coal mines, located in Jackson, Perry and Randolph Counties, Illinois, are 12 miles from the Mississippi River, 68¼ from Carondelet, and 75 from St. Louis. The company owns about 18,000 acres of land. According to the published report of the company, the following statements are based upon actual explorations. Three beds of coal, severally 7, 4 and 6½ feet thick, underlie the Chester tract. The depth of these deposits is respectively 29½, 77 and 119 feet below the surface."

The paper contains also remarks and statistics concerning "The Magnitude of Foreign Iron Manufactures," "The Extent of American Iron Manufactures and Importations," "The Economy of Domestic Manufacture," "The Inducements offered to European Iron-makers and Workmen," and "The Interests and Duties of St. Louis." Altogether, it is a valuable circular, worthy of careful consideration; and it goes far to justify Prof. WATERHOUSE'S prognostication that St. Louis is to be the center of the iron indnstry in America.

We have received a photographic miniature of a map of the Lake Superior Iron Region, published by T. B. BROOKS, C. E., of Negaunee, Michigan. The map appears to be very complete, showing the villages, mines, furnaces and railroads in the tract 60 miles square, lying west of Escanaba and Marquette.

ANSWERS TO CORRESPONDENTS.

J. M., OF N. Y.—To ascertain the amount of horse-power which is the equivalent of the steam delivered through a pipe into a tank containing water, you have to consider that a common boiler consumes 10 pounds of coal an hour for every horse-power obtained, and a Cornish boiler, which is the most economical, half that amount. The amount of coal consumed, therefore, taken in connection with the kind of boiler and perfection of your furnaces and flues, gives you an estimate of the power equivalent to the steam consumed. You may ascertain this in another and more scientific manner by measuring the amount of water in your tank, and the rise of temperature obtained in a certain time by blowing in the steam. This gives you the units of heat actually produced in your boiler. The relation of units of heat to the power obtained was discussed on page 243, of the sixth volume of this JOURNAL.

C. E. R., OF ILL.—The exact heighth of a column of mercury that will be sustained by one pound of pressure per square inch anywhere, varies with the temperature of the mercury. It is nearly 2 inches at the boiling point of water, or 212 deg.; it is one twenty-fifth of an inch lower at 32 deg., and lower still by one-seventieth of an inch at — 40 deg., the freezing point of mercury. These differences are, however, so small that they are usually neglected. The custom is to correct by adding or deducting 0.032 of he height of the column for every degree Fahrenheit above or below a certain standard, which is sometimes 60 deg., sometimes 30 deg., sometimes 32 deg.

R. J. H., OF MO.—The traveling glass blowers use gas when they can get it—otherwise sperm, lard, kerosene, or any other suitable fluid. The glass they use is a lead glass, identical with flint glass, very soft and very fusible. Hard glass of difficult fusion contains no lead. The common glass tubing is lead glass, but tubes may be had of hard glass free of lead. They are usually greenish in color.

E. E. W., of N. B.—The reason why your rubber cement does not harden is probably that it contains turpentine as a solvent. The rubber men often sell such a cement to customers, but they do not use it themselves, as it is well known that turpentine makes with rubber a cement which does not dry well. Pure naptha is the best solvent. Bisulphide of carbon is another very good solvent for rubber, but it makes the rubber swell a good deal, and shrink correspondingly when drying.

P. D., OF VA.—Sulphurous acid is a powerful bleaching agent, and is used for bleaching straw, the straw being exposed in a closed box to the fumes of burning sulphur, which consist simply of sulphurous acid.

W. H. S., OF PA.—Asks "If any substance will keep insects from destroying an etymologist's collection?" Yes, arsenic will, if placed in the boxes.

Correspondence.

[To insure the insertion of correspondence in our columns, the full name and address of the writer must be given.]

Notes of a Journey through the Central Mining District of California.

SACRAMENTO, CAL., May 20, 1869.

EDITOR JOURNAL OF MINING:

SIR:—Since the completion of the California Pacific Railroad from Vallejo to Sacramento, the trader has the choice of two routes to the central and northern mines, viz., by the Sacramento River route, or by steamer to Vallejo, at the head of San Francisco Bay, and thence by rail to Sacramento. By the latter route, one leaves San Francisco on a swift and commodious steamer, and in a little less than two hours is landed on the wharf at Vallejo; taking the cars there, he finds himself in Sacramento after a pleasant ride of two and a half hours through one of the best agriculturnal districts in the State.

VALLEJO.

Vallejo is one of the oldest towns in the State, and was the Capital as early as 1852, but it had not increased in population or business until the past year, when a fresh impetus was given to it by the completion of the California Railroad, which now unites it with Sacramento, and will soon be completed to Marysville and Oroville, thus draining the great Sacramento Valley, and forming a connection with the proposed California Northern Railroad to Oregon. The town is now growing rapidly, and as it is a deep-water outlet to the great grain-growing counties of the Northern Valley System its prosperity must be permanent. One of the most noticeable improvements is a grain elevator, constructed, I believe, on the Chicago model. When this is completed the grain can be discharged in bulk into the holds of vessels for transportation to other parts, thereby saving the important items of sacking, handling, and storing in San Francisco. Had the agricultural resources of California been known as early as 1852, Vellejo might have proved a formidable rival to San Francisco. This town is also connected, by a railroad, just completed, with the important agricultural and vine-growing valleys of Napa and Sonoma.

THE HOMESTEAD MANIA.

As we passed through the outskirts of the town, and for several miles out, I observed the evidences of the present mania for real estate in California, manifested by the numerous so-called "Homestead Tracts," of which there are enough, if improved, to make Vallejo as large a city as San Francisco. It is safe to say that not one man in twenty ever sees the lot he buys. It is represented to his vision by a beautiful landscape on his certificate, always with a train of cars running through it, and he keeps it until a premium can be obtained, then sells it as he would mining stock, never thinking of improving it. On the numerous tracts I only saw one house, and that was built by the company. So violent does the homestead mania rage in San Francisco that hundreds of lots situated on the sandy and barren ridges of that peninsula, and exposed to the stiff ocean breezes, are daily sold in these schemes, and the people still call for more. These tracts are bought for several hundred dollars per acre, laid off in lots of 25 by 100, and sold for thousands of dollars per acre, payable in instalments of $10 per month. Some "cheap Johns" in this business are offering lots as low as $65, payable in instalments of $5 per month. Should you wish to form some conception of these tracts, which are called by such delightful names as "Sunny Side," "Pleasant View," etc., you have only to imagine Coney Island laid off in town lots, and sold at prices varying from $150 to $250, and you have a fair idea of some of these tracts both as regards soil, scenery, topography and accessibility to the city. When this bubble bursts somebody will be hurt, and burst it will very soon unless you Eastern people hurry along with your greenbacks and take some of these lots off our hands.

FARMING IN CALIFORNIA.

Leaving Vallejo, the road runs for miles through a rolling country, blooming with wild flowers, timbered with oak and and containing fine living springs and streams. These are the foothills of the range of mountains dividing Sacramento and Napa Valleys, and here will be the future suburban residences of the wealthy merchants of San Francisco, who can reach, in two hours from their business, a country where they can enjoy all the luxuries of civilization combined with wildness of scenery and abundance of game equal to the Adirondack region of New York. Passing through a tunnel of 600 feet, we emerge into the broad valley of the Sacramento, covered with its immense fields of grain and straggling villages, all presenting an appearance of prosperity and activity.

Farming, like all other business in California, is carried on on an immense scale, and with an exhaustive process of which you have no conception in the older States. Farms, or ranches, as they are called here, comprise thousands of acres, and single fields are often more extensive than the largest farms of the Western prairies. Our route ran for miles along fields whose boundaries we could not see in the distance, as they extended back to the hills. The average wheat-growing capacity of the soil is 25 bushels to the acre; some of the land in Yolo County yields as high as 60 bushels to the acre, and it is the custom to raise two crops from one sowing, the second being called the volunteer crop. The sowing, cutting, reaping, and all work incidental to farming is done with the improved agricultural machinery. The prices of these lands vary from $40 to $80 per acre (coin). Labor commands about $40 per month and found, the men being worked 12 or 14 hours per day. So profitable has been the raising of grain that no other crop is sown, and the soil has no chance to "rest." How long the soil will last under this forcing and exhaustive process is a question which the farmer does not take into consideration, as he is bent on making a speedy fortune, and cares nothing for those who are to succeed him in his property. This wasteful management is the same as as that which, applied to quartz mining, has brought our mines into such disrepute, and in a few years will result in impoverishing the soil to as great an extent as that of the "sacred soil" of the Old Dominion after nearly a century of wear. The grain crop of this year, though not so favorable as that of the last, will yield as much, on account of the greater area of land sown.

SACRAMENTO.

The California Railroad terminates for the present at Washington, on the west bank of the Sacremento River, and opposite the City of Sacramento, the capital and second town of the State. This place is noted for the energy and enterprise of its citizens, the poor accommodations for travers, and the extortion of the hotel keepers. The stranger is unfavorably impressed on entering the town by being compelled to pay one dime for crossing the bridge from Washington; but after he has paid one dollar for a miserable bed, and as much more for a worse breakfast, he is surprised at the moderation of the man at the bridge. Seriously speaking, this toll collecting from foot passengers on his entrance is discreditable to an American town, and the authorities should buy the bridge or pay a yearly sum as commutation for strangers. This town has been repeatedly destroyed by fire and flood, but its citizens have triumphed over every misfortune, and are now enjoying the reward of their enterprise in the rapid growth of the city and appreciation of real estate, consequent upon the completion of the great trans-continental railroads of which it is the California terminus. Within a few years the town has been raised to a ten-foot grade above the originai level, and is now by this means and by its levees, extending for 30 miles up and down the Sacramento and American Rivers, protected from future dangers of flood. The remains of Tutter's Fort, the "New Helvetia of '49," are still to be found on the outskirts of the city. The city is laid out at right angles, the lots in the portion devoted to residences being generally fifty feet front, and ornamented with shrubbery and flowers, which gives the city the appearance of an extensive nursery, and which, in the mind of travelers fresh from the snowy heights of the Sierra Nevada, must leave an impression never to be effaced. The machine shops, round houses, car-houses and all the concomitants of a great railroad center are situated here; in fact, the Central Pacific Railroad is owned, controlled and managed by a few citizens of Sacramento, to whose enterprise, assisted by government aid, the nation owes this road—its strongest bond of union.

My next letter will be devoted to the mining region of Placer and Nevada Counties. W. A. S.

—Prof. Marsh, of Yale College, has discovered in the tertiary deposits of Nebraska, the minutest fossil horse yet obtained. It is only two feet high, although full grown. This makes the seventeenth species of fossil horse discovered on this continent.

Original Papers.

[WRITTEN FOR THE AMERICAN JOURNAL OF MINING.]

THE ASSAY OF SILVER BY THE WET PROCESS.

BY PROF. H. DUSSAUCE, CHEMIST.

V.

Second example.—Let us suppose an ingot of the presumed title of 895-1000ths, the temperature of the normal solution being unchanged. Find in the table of titles, first column, that which is nearest to 895; it is 896.9, corresponding to the weight of 1115 millogrammes; then take this weight of alloy, dissolve it in nitric acid, and after adding one measure of normal solution of salt, clear the liquid by shaking. We are now in doubt whether to proceed with the decimal solution of salt or with that of silver. If the first precipitates, continue to use it, but if it does not, neutralize it by a similar addition of the second, and shake the liquid to clear it; the operation is brought back to the starting paint, and we know that we are to proceed with the nitrate of silver. Let us suppose that the alloy, after the addition of the normal liquid, is precipitated by the decimal solution of salt. The first five thousandths cause a precipitate, but not the sixth, which, consequently, is not counted. It has required more than 4-1000ths and less than 5-1000ths; that is, it has required 4 1-2 to precipitate entirely the excess of silver contained in the solution of the alloy. We find in the table of titles for salt, the number on the horizontal line 1,115, and in the column 4; viz., 900.4; and adding 0.5 to that number we shall have 900.9 or 901 for the title. It is only for lower titles that a more accurate correction is important: and in such cases it can easily be obtained by remarking that the correction is proportional to the lowering of the title. Thus, in our example, the title of the alloy being about 900, the fraction 0.5 ought to have been diminished by 0.05, which would reduce it to 0.45. Let us suppose, now, that the same alloy, after the addition of the normal measure of salt, precipitates with the nitrate of silver, and that the three first thousandths had produced a slight precipitate, but the fourth not; the number of thousandths of nitrate of silver really necessary for the complete precipitation will be 2.5. To obtain the real title of the alloy, 1115 parts of which were supposed to contain about 1000 of silver, we should take the number found in the second column of the nitrate of silver table on the horizontal line 1115. This number, which is 895.1, diminished by 0.5, gives 894.6 for the title of the alloy.

Third example—The temperature of the normal solution of salt being 18° *C., while that at which it was titled was* 15° *C.* The title of the ingot of silver submitted to the assay is about 795-1000ths. We look in the first column of the table of titles for that which comes the nearest to this title, and find it to be 793.7, corresponding to the weight 1,260. Take this weight of the alloy and set about finding the title as before. Let us suppose it has required 6.5 thousandths of salt to precipitate all the silver contained in the alloy, the title, without correcting for temperature, will be 798.4+0.4=798.8. Now, to find the correction, we look at the 15° column of the table on the horizontal line 18°, and the number 0.3, having the minus sign, must be subtracted from 798.8, giving 798.5 as the required title. If the temperature of the solution is 12° instead of 18° the correction is +0.2, and the title of the alloy is 798.8+0.2=799.

APPROXIMATE DETERMINATION OF THE TITLE OF AN UNKNOWN ALLOY.

We have supposed that the title of an alloy to be tried was approximately known, and such, indeed, is nearly always the case. If the assayer did not know it, he would have two ways of ascertaining it. 1st. He may put into the cupel 1 decigramme of alloy with 1 gramme of lead, or, if he does not want to resort to cupellation, he proceeds by the wet method as follows: He supposes the title of the alloy to be known within 1-20th. He takes a weight corresponding to its supposed title, and he finds the title by adding the decimal liquid, one ten thousandth at a time. When he has passed the point of complete precipitation he has the title of the alloy within five thousandths. This is near enough, but he may obtain a closer approximation by proceeding by five thousandths, which will give him the title of the alloy within 2.5 thousandths. If we have an alloy of the supposed title of 840-1000ths we take the weight of 1190, corresponding to that title, and proceed in the usual manner, by introducing each time a pipette of 10-1000ths of decimal solution of salt. We find that the fifth pipette does not produce a precipitate, and consequently the number of thousandths of salt necessary for the precipitation of the silver contained in the alloy is 35. The 1190 of alloy contains, therefore, 1000+35=1035 of silver, and the approximate title is obtained by the following proposition:

1190 : 2035 :: 1000 : X=869.7.

REDUCTION OF THE CHLORIDE OF SILVER OBTAINED IN THE ASSAYS BY THE WET METHOD.

In the process by cupellation the assayer gives back the button of silver to the owner of the alloy, but in the assay by the wet method he is obliged to keep the chloride, and to give in exchange an equivalent weight of silver. To obtain this weight easily, take silver wire of a known title and cut it in pieces for weights. The chloride of silver can be reduced without sensible loss; after washing it well, dip into it pieces of iron or zinc, and add sulphuric acid in sufficient quantity to keep up a weak disengagement of hydrogen gas. Do not touch it, and in a few days the silver is completely reduced. This is easily known by the color and nature of the product, or by treating a small part with ammonia, which, if the chloride is entirely reduced, does not give a precipitate when saturated with an acid. The first washings are made with water, mixed with a little acid, to dissolve the oxide of iron which may be formed; the others are made with ordinary water. After decanting the water of the last washing, dry the mass and add a little powdered borax. The last thing to be done is to melt it. The powdered silver is put by successive portions in the crucible. The heat at first must be moderate, but toward the end of the operation it must be strong enough to fuse the silver and scoria completely, and produce a separation. If it is found that all the chloride is not reduced, add a little carbonate of potash to the chloride. This process appears to be the best, but the silver can be immediately obtained by melting the chloride with chalk and charcoal. The chloride is dried, and to know the quantity of water remaining in the mass, add for 100 parts of dry chloride 70.4 of chalk and 4.2 of charcoal; mix these three substances carefully, and fill a crucible three-quarters full; as fast as the mixture falls down in the crucible add new portions, and end by a good heat. Let the silver cool in the crucible, and it is easily detached from the saline mass. The title of the silver thus obtained is from 999 to 1000 thousandths.

TO BE CONTINUED.

The Proper Management of Mining Enterprises.

We take from the Chicago *Tribune* the following interesting and valuable suggestions relative to the management, especially of gold and silver mining enterprises.

"It is well known that many mines of the precious metals, which, judging from their location, extent and quality of ore, should be worked with profit, prove a source of loss to their owners, and that many apparently good mines have been abandoned on this account. Mining and mill superintendents, who have undertaken the duties of such positions without possessing the necessary qualifications, are usually provided with plausible excuses for the failures which are due partly to their own incapacity, but primarily to the lack of ordinary discretion exhibited by those who employed them. It is singular, but nevertheless true, that while practical knowledge and skill are considered indispensable qualifications in an architect, master mechanic, or profe-sional man, the Directors of mining companies frequently select their superintendents without reference to their knowledge of mining and metallurgy, but because they are "good fellows," and have some notions of business in general. The operations conducted under such supervision can only be vague, and more or less costly, experiments. The ignorance of a superintendent, whose only recommendation, aside from the fact that he owned a few shares of the company's stock, was that he had been a steamship Captain, with a convivial turn of mind, cost a Nevada company half a million dollars. The Mariposa estate, one of the richest mining properties in the world, embracing one hundred square leagues of mountain ranges seamed with gold and silver-bearing lodes, was so badly mismanaged for several years, under the superintendence of eminent lawyers and literary men, that the company became deeply involved in debt, and suspended work in every quartz-mill but one out of a dozen that had been in operation on the estate. At length an experienced and capable superintendent was employed, who caused the mills to be remodeled and supplied with necessary machinery which had been lacking, and introduced economy and system in the working of the mines, and the consequence is that such ores as had formerly yielded but four or five dollars to the ton now yield forty to fifty, and the property is handsomely remunerative. Similar instances are not rare in the experience of miners.

The first thing to be done with a mine, after locating and testing it, is to open it properly. It is not advisable to erect a mill or reduction works of any kind until the mine has been so thoroughly opened that no delay need be encountered in taking ore from it. Experienced miners differ as to whether it is preferable to work a mine through a shaft, a tunnel or an incline, but this question is usually determined by the location of the lode. When the opening is made through solid rock, as sometimes happens, progress is slow and the work costly; when it is made through earth, timbering is essential, and in sections where timber is scarce the expense is considerable. It is, therefore, important that the shaft, tunnel or incline should be commenced at the right place, and that the work should be properly done throughout; otherwise, as in the case above cited, heavy loss may be the result. Nearly every lode "dips" more or less; that is, its course downward through the earth is in an oblique direction; and when it is proposed to sink a shaft, the direction of the dip is ascertained as nearly as possible, so that the vein may be struck at a certain distance—say a hundred feet—below the surface. At this depth galleries are opened into the ledge on either side, and the shaft is continued downward, following the dip of the lode, galleries, or "levels," being opened at convenient distances apart. A tunnel or an incline is run at more or less approximation to right angles with the lode, and, having reached the latter, is succeeded by a shaft, with side galleries.

When the mine has been opened in this manner, and no doubt remains that it will supply abundance of paying ore to the mill, the latter may be erected. It should be located as near as possible to the mine, but must be supplied with plenty of running water. It capacity should depend upon the quantity of ore which can be supplied to it, and, perhaps, somewhat upon the capacity of its owner's pockets. In selecting machinery, all new inventions which have not been thoroughly tested and approved by practical mill-men should be avoided. It is time enough to experiment after the mill has got fairly into operation. For crushing ores, no machinery has yet been devised which can compete with the stamp battery. A twenty-stamp mill, with the assistance of a "crocodile smasher," will reduce about thirty-five tons of ore to the fineness of common sand in twenty-four hours. Usually ores are crushed wet, a stream of water being caused to flow constantly into the battery, mingling with the pulverized ore and carrying it in solution throughout the remaining processes. Quicksilver is placed in the batteries, and there absorbs part of the metal which is disengaged by crushing. From the batteries the pulp, as it is termed, passes through troughs lined with copper, upon which quicksilver is placed, to collect another portion of the metal, to the series of grinding and amalgamating pans, where it is still further triturated, and at the same time thoroughly agitated with quicksilver, and with such chemicals as may be adapted to the quality of ore operated upon. In cold weather it is necessary to use warm water, or to heat the pans by steam, and some superintendents consider this course preferable in all weathers. When the ore contains no sulphurets, the pulp is usually allowed to run from the pans as waste. The amalgam being collected is strained through buckskin until a solid residuum remains, which is retorted, and is then ready for the melting-pot, the "brick"-mould, the assay office, and the mint, in their turn. But when the ore contains sulphurets, the pulp is carried from the pans to "shaking-tables," which, being agitated with a peculiar motion, collect the sulphurets in the centre and throw the waste sand off at the sides. The best treatment for sulphurets is that known as the chlorination process, in which they are first roasted in a furnace, and then subjected to the action of chloric acid, which forms with the metals a chloride of gold or silver, easily reducible.

Of grinding and amalgamating-pans there are many patterns, none of which accomplishes all that is claimed for it. Great caution should be exercised in selecting these essential portions of quartz machinery, and they should not be taken upon the recommendation of the inventor, agent, or any other person interested in their sale, or on the strength of experiments made under the supervision of such persons, because it is a very easy thing to 'salt' a pan by introducing into it fine gold, or quicksilver impregnated with gold.

Silver ores sometimes contain a large proportion of lead; and when this is the case they can be more cheaply reduced by smelting than by any other process, if fire-brick for furnaces and limestone or other substance suitable for a flux yet discovered, but it has not hitherto been found in our Western mining regions.

While, as we have hinted above, there are cases of gross ignorance among mining superintendents, it is also true that so little progress has been made in metallurgical science in this country, that the mills return only seventy-five per cent of the assay value of the ores; wherefore many mining companies in California and Nevada ship the best of their ores to Swansea, Wales, where nearly one hundred per cent is obtained. There is a wide field in this country for discoveries and improvements in metallurgy and he who simplifies and reduces the cost of the reduction of refractory ores will confer a great benefit upon miners, and at the same time make his own fortune."—*Chicago Tribune.*

The Diamond Drill in Colorado—A Hole to be Bored Eight Hundred Feet Deep to Prospect a Mine.

The Colorado *Register* has an interesting account of the Diamond Rock Drill that was illustrated in the JOURNAL OF MINING of March 27, 1869, and of a project on foot, which, if carried out, will test its capabilities to the uttermost point. It is proposed to bore a hole through hard rocks, for a distance of not less than eight hundred feet. These drills, it will be remembered, are manufactured by Mess. SEVERENCE & HOLT, Nos. 14 and 16 Wall Street, this city:

"By recent valuable mechanical applications to the driving of diamond drills most remarkable results have been obtained. For a long time diamonds have been used in dressing mill stones and hard substances, and a few years ago a distinguished French engineer, Monsieur Leschot, conceived the idea of drilling mines and quarries by the direct application of pure carbons.

"His invention was sold for a large sum in the United States, to a company organized upon a basis of some millions of dollars, situated in New York, but from a singular want of mechanical skill upon the part of the directing officers of the company, no successful results were ever obtained, and the diamond drill project soon became classified with the impracticables: but within a comparatively late period the rights of this company were purchased by two ingenious New Englanders, who soon, by a few mechanical appliances, put a diamond drill in successful operation, and during the past few months a number of the machines have been working in Massachusetts, Vermont, Connecticut and Pennsylvania.

"The principle is a very simple one, which we will briefly explain to our readers. The power employed is from three to five horse power, the engine, an oscilator, is upon a cast iron frame, which also sustains an upright boiler, smoke stack, shafts of hydraulic pipe, sustaining driving gear, etc., the whole weight about three thousand pounds. The drill proper, passing through a screw shaft, consists of a tubular bar, made of common gas pipe, with a steel or composition boring head, also hollow; upon the end of this hollow head are embedded a number of black diamonds, or cheap carbons, which are of quite moderate value compared with the bright and sparkling brilliants which embellish the toilets of our fair belles.

"These diamonds cut the path, while others placed upon the outer and inner peripheries, enlarge the cavity, admitting of the free passage of the drilling bar. The drilling bar is revolved with slight pressure, regulated by a feeding screw, from four hundred to eight hundred times a minute; the result is a progress depending upon the quality of the material bored.

"In ordinary marble four to six inches per minute are easily cut, but whatever the material, be it ever so hard, of quartz, flint or even steel, it must yield before the keen edge of the hardest substance known in the arts. Upon one experimental trial thirteen inches per minute were made in the Vermont marble, near Rutland.

"By the use of the hollow drill a perfect bore is obtained of the material entered, and the most singular feature is the ability of the drill to extract successive lengths of cores to a very great depth. This is done by adding lengths of pipe, which are firmly screwed together.

"The pipe being hollow, water is forced through continually by a small steam pump, connected with the main engine, which discharges itself between the diamond teeth, carrying all the fine grit and borings outside the pipe to the point of commencement. The feeding gear of the drill is so regulated as to correspond with the hardness of the material being bored, slipping harmlessly but at a sure though more moderate rate when an unusually hard substance is met. By testing machines now used in Vermont, from one hundred feet to three hundred feet are taken from the marble quarries. These are from an inch and a half to three inches in diameter, as required.

"In connection with the same machine, a solid or convex head is used in drilling for blasting purposes, or to find coal-beds or oil; this can be driven from eight hundred to one thousand feet; of course by this head no core is obtained; a machine is now making to bore with the solid head a hole six hundred feet in length, seven inches in diameter, to liberate the water of and ventilate the mine.

"We may congratulate our readers by the intelligence that this drill is to be immediately introduced into this territory, the owners of the same, (Messrs. Severence & Holt) having contracted to run a test hole with the core drill the immense distance of eight hundred feet, which is expected by the contractors to be finished in from thirty to forty days from the time of commencement.

"This contract is made with J. P. Whitney, our late Commissioner to Paris, the test hole to be run from the end of the tunnel owned by the Bullion Consolidated and the Incas Silver Mining Companies, in Fletcher Mountain, Summit county. This tunnel has now been driven almost incessantly for nearly three years by hand labor, and is now in some six hundred or seven hundred feet. This will give some fifteen hundred feet of development, and is expected to show the nature and quality of ore taken from seven or eight veins from a depth beneath the surface of one thousand and twelve hundred feet. This will give a practical demonstration of the value of the silver mines of that locality beyond all cavil. The companies of which Mr. Whitney is treasurer, being in possession of large working capitals, we may expect from their enterprise most valuable results. The contractors of this labor or their agents will be in Colorado by July 1, and it is quite likely that any parties desiring their service, for draining or experimental run, can secure them. For this contract steel pipes of great strength are being made. At Fletcher mountain tunnel compressed air will be used, compressed at the mouth of the tunnel and conveyed to the drill by pipes. For ordinary tunnel work or shaft sinking, three or four of the drills can be worked in a space of six by six with compressed air."

A Diamond Test.

The more valuable an article is the more it is counterfeited, and the greater the perfection to which falsification is carried. The diamond has been so successfully imitated that he must be an expert indeed who can tell the false from the true. It by no means follows that because a man deals in jewels his honesty must be of the first water, and the fact of a purchaser having paid for a diamond is not always proof that he has obtained one. There are known tests of genuineness, it is true, hut they are chiefly optical, and require apparatus and skill to make them. A method which any one can apply, or easily get applied, has been a desideratum; but the want exists no longer. If you have a doubtful stone put it, or cause it to be put into a leaden or platinum cup, with some powdered fluor spar; and a little oil of vitriol; warm the vessel over some powdered charcoal, in a fireplace, or wherever there is a strong draught to carry away the noxious vapors that will be copiously evolved. When these vapors have ceased rising, let the whole cool, and then stir the mixture with a glass rod to fish out the diamond. If you find it intact it is a genuine stone; but if it is false it will be corroded by the hydrofluoric acid that has been generated around it. A small "paste" diamond would disappear altogether under the treatment. They who profit by this recipe have to thank Signor Massimo Levi, an Italian chemist.

Mont Cenis Tunnel.

Steady progress continues to be made with the works of the great tunnel through Mout Cenis. At the end of last month 9,386 metres had been completed, viz., 5,474 metres at the south end, and 3,912 at the north. The number of metres still to be excavated is 2,835. It is stated that the character of the rock at each of the workings is now the same, and there seems to be good reason for believing that the present rate of advance, 112 metres a month, will be maintained to the end. In that case the opening of the tunnel through its entire length may be expected to take place by the month of July, 1871, or perhaps earlier, owing to the improvements which are constantly taking place in the manner of working.

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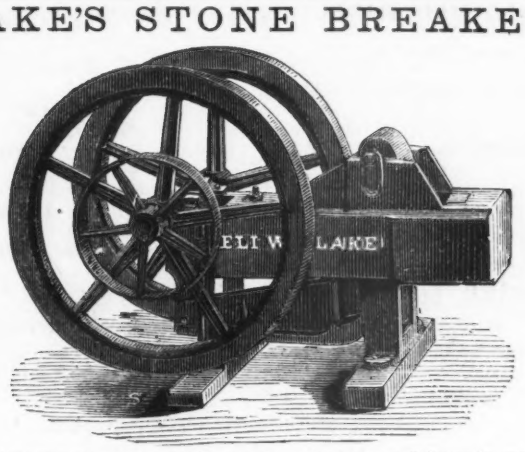

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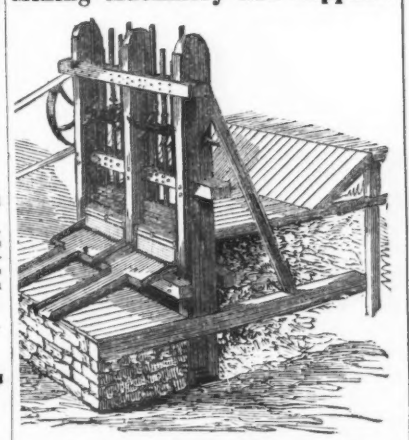

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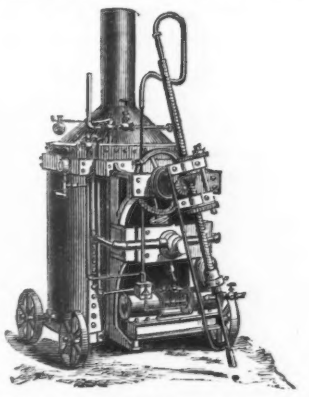

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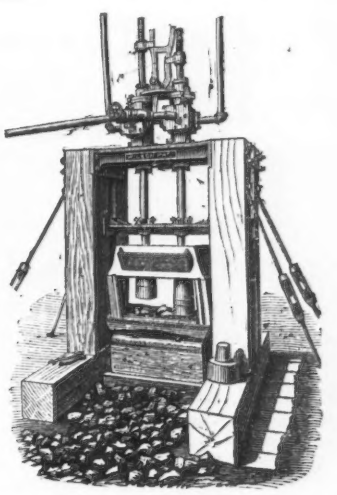

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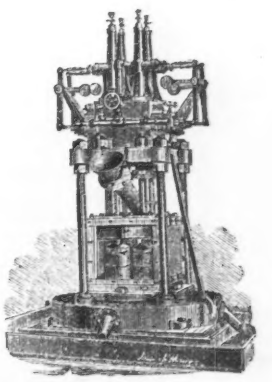

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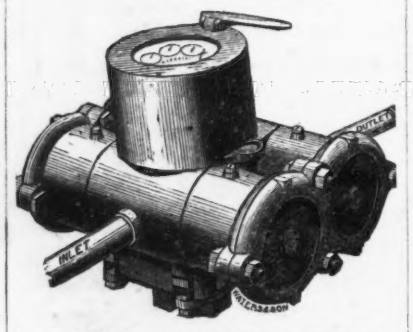

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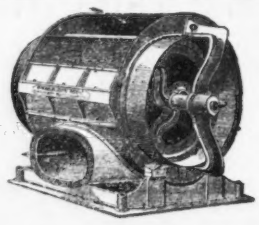

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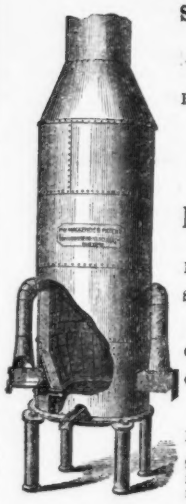

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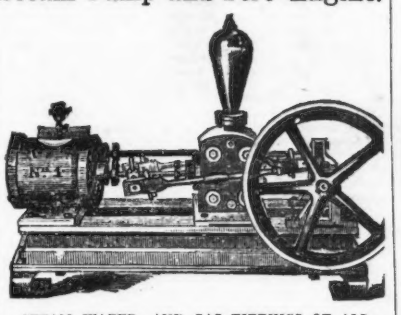

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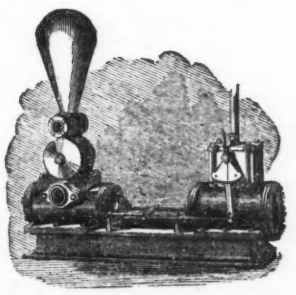

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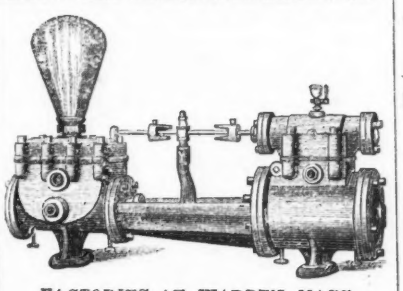

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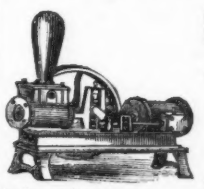

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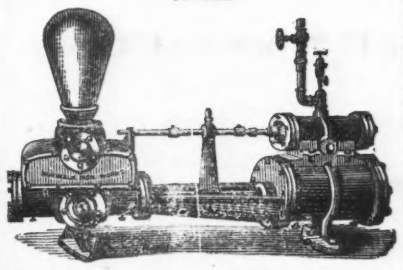

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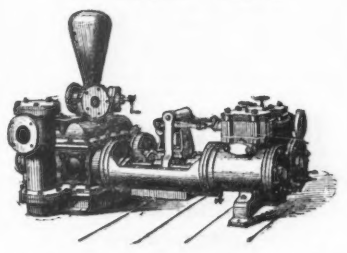

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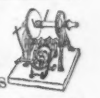

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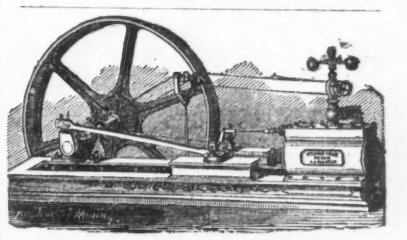

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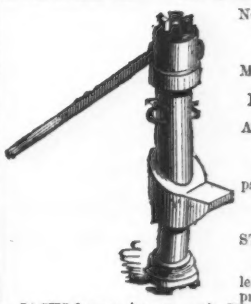

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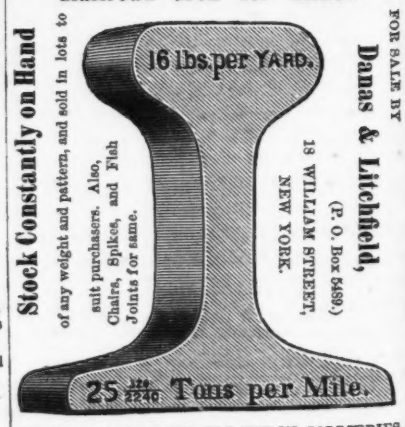

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